INDEX OF SUBJECTS.

ABSTRACTS, 1886.

And also to Transactions, 1886 (marked Trans.); and to such papers as appeared in Abstract of Proceedings but not in Transactions (marked Proc.).

Acetone phosphorus compounds, 609. Acetonitrile, iodo- and bromo-, 1001. Absorption and photographic sensitive-- trichloro-, polymeric, 323. ness, connection between, 958. Acetophenone, action of heat on, 865. Absorption spectroscope, new, 113. ---- action of, on ammonia, 369. Acer dasycarpum, leaves of, 1065. - p-amido-, and some of its deriva-Acetamide, combination of, with metaltives, 60. lic chlorides, 337. - brom-, action of phenylhydrazine chlor-, action of bromine on, 45. on, 547. Acetamidobenzoic acid, 548. chlorination of, 800. Acetamidobenzoic acids, p- and m-, mononitro-derivatives of, and their — oxidation of, 462. physiological action of, 385. products of reduction, 149. Acetophenone-azonaphthol, 61. Acetamidostrychnine, 814. Acetothiënone, bi chloro-, 537, 538. bromo-, Acet-hydroxyhydroethylquinoline, Acetotoluide, diamido-, 545. Trans., 507. Acetic acid, estimation of, by distilla-Aceto- o-, m-, and p-toluide, dichlor-, tion in liquids containing organic 159, 160, 161. matter, 582. p-Acetotoluidine, m-bromo-, m-nitro-, - fluidity of absolute and di-1018. luted, 971. Aceto-o-toluylenediamine, 874. hydrated, magnetic rotation Acetoxyacetonitrile, 605. of, TRANS., 779. Acetoxydibromobenzylidene - phenylhy- thermal properties of, Trans., drazine, 66. Acetoxypropionitrile, 605. β -Acetylglutaric acid, 337. - trichlor-, preparation of, 222. - vapour-pressures of, Trans., Acetylkairine, TRANS., 507. 765, 774, 776. Acetylthalline, 80. Acetoacetates, condensation of, with m-Acetyltoluene, o-amido-, and some of bibasic acids, 47. its derivatives, 60. Acetobutyl alcohol, normal, preparation Acid chlorides, action of, on inorganic of, 218. compounds, 222. Acetocresol, 61. Acids and alcohols, fatty, diffusion of, Acetodiethylthiënone and its acetoxime, — of the fatty series, thermochemical relations of, 295. Acetoethylthiënone, 538, 539. conductivity of, 114.
fatty, and their derivatives, heats - and its nitro-, and hydroxylamine

of combustion of, 757.

- heats of combustion of, 296.

- formation of, from aldehydes by

derivatives, 227.

detection

liquids, 495.

Acetone, action of heat on, 865.

of,

in pathological

the action of anhydrides and salts, TRANS., 317. Acids, influence of the constitution of, on their electrical conductivity, 294. - of the acetic series, sp. gr. and specific heats of, 439. - of the benzene series, heats of solution and of neutralisation of, 8. - organic, biological significance of, 905. - polybasic, indicators of the relative energies of, 420. unsaturated, constitution of, - volatile, amounts of, in the excrements of ruminants, 87. ---- fatty, in urine, 384. Aconitic acid, constitution of, 638. Aconitine, 565. Acoretin, 896. Acorin and its derivatives, 895. Acridine derivatives, crystallography of, occurrence and synthesis of, 1033. Acrylacetic acid, heat of solution, and of neutralisation of, 8. Acrylic acid, β -bromo-, 531. -- bromiodo-, 530. -- chlorobromiodo-, 531. ----- chloriodo-, 531. — — dibromo-, 687. — — diiodochloro-, 531. Actinolite, chemical composition of, 28. rock from Dalecarlia, 990. Actinosphærium, digestion in, 1053. Adenine, 567. Adipic acid, pyrogenic decomposition of, 224. Adipocere, 89. Adonidin, 94. Adonis vernalis, a glucoside (adonidin) obtained from, 94. Æsculus hippocastanum, leaves of, 1065. Air, action of, on haloid salts of the alkalis, 664. - amount of carbonic anhydride in the, 504. — at Cape Horn, 418. atmospheric, liquid, 8. - electrical conductivity of, under reduced pressure, 3. —— liquefied, density of, 661.
—— new apparatus for estimating carbonic anhydride in, 835. —— of forests, oxygen in, 1066. — percentage of oxygen in, 199. — pump regulator, 118. Alaskite, 21, 515.

Albertite from Strathpeffer, Ross-shire,

Albinism in the leaves of Quercus rubra,

TRANS., 839.

1133Albite, optical properties of, 210. Albumin, congulation of, 373. - composition of, 635. ---- detection of, 748. —— intestinal digestion of, 376. — nutritive value of, 901. --- nutritive value of some digestion products of, 377. — reaction, 183. — separation of, from peptone, 1087. - uranyl acetate as a reagent for, Albuminoïd substance in urine, 87. Albuminoïds: gelatin and peptones, capillarimetric distinction between, - in seeds, microchemical detection of, 1088. - products of the action of hydrochloric acid on, 85. Albumins, new method of separating globulins from, 164. Alcohol, and mixtures of, with water, physical properties of, 193. - electrical conductivity of, 4. - method of determining, 493. Alcohols, action of Bacterium aceti on, Trans., 175. and acids of the fatty series, diffusion of, 11. - of the fatty series, thermochemical relations of, 295. - and their aqueous solutions, size of the maximum drops of, 844. - decomposition of, by heat, 137. - polyhydric, action of phenyl cyanate on, 49. Aldehyde, iodo-, 330, 864, 1006. Aldehyde-collidine, constitution of, 257.Aldehydes and phenols, reaction between, 695. condensation of, with bibasic acids, 47. Aldehydines, constitution of, 943. p-Aldehydocinnamic acid, 461. Aldehydocinnamic acid, nitro-, 461. o-Aldehydophenoxyacetic acid and its derivatives, 65. compound of, with phenylhydrazine, 66. Aldoximes, bases from, 783. Algæ, fresh water, microscopic, 1060. Alkaline earths, action of dry carbonic anhydride on, 927. volumetric estimation of, 180. – diamines, 329. salts, toxic action of, 385.

Alkali waste, utilisation of, 288.

Alkalis, conductivity of, 114.

— estimation of, 490.

- Alkalis, caustic, and carbonic acid in presence of each other, 920.
- haloid salts of, action of air, silica, and kaolin on, 664.

Alkaloïds, 476.

- colour reactions of, 584.
- determination of, in urine by means of iodine solution, 748.
- estimation of, in the leaves of Atropa belladonna, 105.
- from erythroxylon, 85.
- ---- in old flour, 164.
- —— of fenugreek seeds, 85.
- reactions of iodine chloride with,
- reagent for, 182.

Alkophyr, 338.

- Alkyl bisulphides, preparation of, 217. - chlorides, action of ammonia and the methylamines on, 439.
- · iodides, action of, on amido-acids,
- · isomelamines derived from the alkyl cyanamides, 41.

- melamines, normal, 38.

Alkylene haloïds, action of aluminium haloïd salts on, 435.

Allanite, 779.

- a decomposition product of a variety of kaolinite from Nelson Co., Virginia, 128.
- --- as a rock constituent, 317.
- from Nelson Co., Virginia, 127. Allantoïn, effect of, in the estimation of
- urea in urine, 583. - presence of, in the wheat germ, 734.
- Alloxan, action of phosphoric chloride on, 226.

Alloy of high conductivity, 109.

- Alloys, action of acids on, Proc., 189.
- containing the heavy metals, selenium, tellurium, &c., TRANS., 735.
- copper and cobalt, 109.
 of lead and tin, specific heat of, 961.
- Allyl nitrite, 218.
- Allyl-sulphuric acid and its salts, 43.

Almond oil, testing, 494.

- Alum and potassium hydroxide, the thermochemical analysis of the reaction between, 589.
- Alumina, determination of, 281.
- determination of, by titration, 651.

- ---- in superphosphate, 288.
- preparation of, 108.
- volumetric estimation of, 282.
- Alumina-hornblende, chemical composition of, 29.
- Aluminium-alcohols (Part III), alumi-

- nium orthocresylate and its products of decomposition by heat, TRANS.,
- Aluminium alloy, 772.
- and iron, separation of, 100.
- chloride, decomposition of, in solution, 975.
- --- reaction of, with hydroxyl compounds, 143.
- estimation of, in phosphates, 393, 491.
- fluosilicates, 981.
 - lactate, 1009.
- orthocresylate and its products of decomposition by heat, Trans., 25.
- peroxide, 305.
- potassium silicate, 667.
 - preparation of, 401.
- separation of titanium from, 492.
- sodium rilicate, 667.
- ---- sulphate, basic, 981.
- preparation of perfect crystals of, 204.
- Alums, specific refraction and dispersion of, 293.
- Alunite, Roman, treatment of, 402.
- Amarine, mono-substituted derivatives of, 237.
- silver, additive products of, 237. Amidation, partial, of polynitrated aromatic compounds, 1021.
- Amides, action of bromine in alkaline solutions on, 45.
- comparative researches on the formation of, during the germination of various seeds in the dark, 90.
- conversion into amines, 1006.
- Amidines, action of ethyl acetoacetate on (pyrimidines), 45.
- Amido-acids, action of alkyl iodides on.
- resulting from the decomposition of proteïds, 373.
- Amidoazo-derivatives of the three xylenes, 58.
- Amidogen, substitution of, by means of sodamide, 1004.
- Amidoximes, method of preparing, 875.
- Amines, action of oxymethylene on,
- heat of combustion of, 409.
- of the fatty series, decomposition of, 783.
- primary, method for preparing, 939.
- tertiary aromatic, removal of ethyl from, 940.
- Ammelide (melanuric acid), 523.
- Ammeline and its hydrochloride, 523.
- Ammonia and hydrogen bromide, dissociation of compounds of, 500.

```
Ammonia, aqueous, electrolysis of, with
                                             Amyl, thiocarbanilate, 338.
  carbon electrodes, 979.
                                                – thiocarbamate, 337.
   - decomposition of, by electrolysis,
                                                – thioallophanate, 338.
                                                 - thiochlorocarbonate, 337.
    - displacement of, by alkaline bases,
                                             Amylaceous granules in Gregarinæ, 383.
  1074.
                                             Amylchlorophosphinic acids, 529.
   - estimation of, 1075.
                                             Amylene hydrate, decomposition of, by
 — in soils, 739, 740, 831, 832.
                                               heat, 137.
Ammoniacal ferment, 386.
                                             Analcime, 318.
Ammonium antimoniate, 20.
                                             Analysis, organic elementary, 649.
--- calcium ferrocyanide, 860.
                                             Andesine and oligoclase, 776.
    - carbamate, limited hydration of,
                                                 · from Ardèche, analysis of, 211.
  501.
                                             Anemone-camphors, 365.
    - chloride, action of lead oxide on,
                                             Anemonic acid, 366.
                                             Anemonin, 366.
    - cyanide, synthesis of, by the silent
                                             Angelic acid, 867.
  discharge, 604.
                                             Anhydroacetodiamidobenzoic acid, 149.
  -- fluoride, compounds of, fluorides of heavy metals, 670.
                                             Anhydro-compounds, 544.
                                             Anhydroformaldehyde compounds, 330.

    furfuropicramate, 612.

                                             Anhydrotaurine, Trans., 490.
 --- hydrogen tartrates, crystalline form
                                             Anilbenzoïn, 887.
                                                 - bromo-, 888.
 --- magnesium phosphate, a new, 204.
                                             Anilic
                                                      acid, nitro-, constitution of,
   — manganese chromate, 426.
                                               1021.
  --- oxalates, solubility of, 443.
                                             Anilides, formation of, 697, 698.
  - salts, action of vanadic acid on,
                                             Anilidoacetic acid, 351.
  672.
                                             β-Anilido-acids, condensation products

    decomposition of, by metallic

                                               from, 551.
  oxides and hydroxides, 770.
                                             Aniline, action of acetone on, 145, 235.
         - nitrification of, Trans., 643,
                                                 - action of isobutyric acid on, 52.
  654.
                                                 - p-bromo-, nitration of, 52.
   - sulphate, action of nitrous acid on,
                                                 - dinitro-, action of potassium cyan-
  747.
                                               ide on, 791.
          - compared with nitre as a
                                                 - hydrogen sulphate, 347.
  manure, 954.
                                                 - o- and p-nitro-, from the corre-
    - --- decomposition of, by means
                                                sponding nitrophenols, 872.
  of sodium sulphate, 107.
                                                 - nitro-, hydrobromide, 941.
   — electrolysis of, Proc., 248.
                                                 - m-nitro-, introduction of methyl
   — failure of, as a manure, 646.
— or Chili saltpetre as a manure,
                                               into, 940.
                                             Aniluvitonic acid, constitution of, 1027.
                                             Anilylmelamine, Trans., 743.
   — \beta-sulphophthalimide, Trans., 519.
                                             Anisic acid, preparation of, 352.
    - thiocvanate, nitrification of, by soil,
                                                  - --- salts of, 65.
  TRANS., 639.
                                             Anisoïlisatine, 155.
   — thiotungstates, 510.
                                             Anisoilphthaloylic acid, 1029.
    – vanadates, 671.
                                             Anisoïls at high temperatures, 872.
   - m-xylenephthaloylate, crystalline

    mononitro-, preparation of, 345.

   form of, 619.
                                              Ankerite from the coal-measures, 775.
Amœba, digestion in, 1053.
                                              Annerödite from the pegmatite vein at
Amphibole schists of the Tyrol, altera-
                                                Moss, 27.
   tions of the garnets in, 29.
                                             Anorthite from the basalt of Iceland,
Amphibole-anthophyllite from Balti-
                                                   rocks from St. Thomas, 993.
   more, 128.
                                              Anthracene, chloro- and bromo-deriva-
 Amphiboles, chemical composition of, 28.
 Amphicreatinine, 634.
                                                tives of, 717.
 Amphopeptone, 820.
                                              Anthracenecarboxylic acid, chloro- and
 Amyl chloracetate, 784.
                                                bromo-, 248.
```

Anthrachrysone, 556.

Anthragallolamide, 69.

nitro-derivatives of, 69.

Anthragallolsulphonic acid, 69.

Anthragallol, action of ammonia on, and

--- dithiophenylallophanate, 338.

points and sp. volumes of, 966.

— nitrite, preparation of, 327.

- methyl ketone, synthesis of, 45.

- salts of normal fatty acids, boiling

Anthranil-hydroxylamide, 358. Anthranilamide, chloro-, 360. Anthranilanilide, amido-, 358. Anthranilic acid, chloro- and bromoderivatives of, 359, 360. nitro-, bromine-derivatives of, 359.

Anthrapinacone, 248.

Anthraquinone, m-chloro-, TRANS., 531. - synthesis of homologues of, 557. Antimonic oxide, 428.

Antimonio-molybdates, 511.

Antimonio-tungstates, 511.

Antimonious compounds, isodimorphism of, 503.

Antimonite from Czerwenitza, 22.

Antimonoso-molybdates, 427.

Antimonoso-tungstates, 427.

Antimony and its compounds, specific heat of, 655.

arsenic and tin, separation of, 1078.

- atomic weight of, 856. --- compounds, aromatic, 884.

— electrolytic estimation of, 493.

- native, from New Brunswick, 311.

--- pentachloride, Trans., 708.

— separation of, from tin, 1077.

— sulphate, 513.

- sulphide, 429, 512.

- action of potassium sulphide on, 309.

- --- decomposition of, by hydrochloric acid, 308.

 —— equilibrium in the reaction of hydrochloric acid on, 20.

- sulphides, action of hydrogen peroxide on, 20.

- trichloride, equilibrium in the reaction of hydrogen sulphide on a solution of, 20.

Antipeptone, 820.

Apatite from Turkestan, 600.

Apophyllite from Wermland, 28.

Aposepine, 933.

Apparatus for chemical laboratories, 15, 301.

for drying and heating, 278.

for operations in a vacuum, 178.

for the preparation of carbonic anhydride, 184.

- for the quick reduction of measured gas volumes to normal condition, 96.

 to extract solutions with liquids, 198.

Apricot oil, 644.

Arabinose, decomposition of, by dilute acids, 138.

Arabonic acid, 869.

Aragonite from Lower Silesia, analyses of, 212.

Arfvedsonite, 128.

- chemical composition of, 28.

Arginine and its salts, 725.

Argol, examination of, 182. Argyrodite, a new silver ore, 774.

Aromatic amines, citraconic acid as a reagent for, 697.

 bases, condensation of, with aldehydes, 552.

series, bromo-substitution compounds of the, 1015.

 substances in the animal organism, **73**0.

Arsenates, crystallised, 771.

Arsenic, antimony, and tin, separation of, 1078.

- determination of, 579, 1073.

- complete removal of, from hydrochloric acid, 850.

copper reduction test for the estimation of, 1074.

— estimation of, 920.

- - in ores, mattes, and metallic copper, 100, 920.

in bleaching powder and in potassium chlorate, 99.

— native, of Valtellina, 206.

- post-mortem imbibition of, 89.

- Reich's method for determining, 742.

 separation from the alkaline earths, 393.

 Swedish method of testing for, 100. - the Marsh-Berzelius method of testing for, 489.

Arsenic acid, determination of, in mineral waters, 649.

hydrates of, 202.

Arsenical pyrites from Bolivia, 514. - Hungarian, analyses of, 514.

Arsenious compounds, isodimorphism of, 503.

Arseniovanadates, 205.

Arseniovanadicovanadates, 205.

Arsenolamprite (arsenic glance), 773.

Arsenoso-arsenio-tungstates, 427.

Arsenoso-molybdates, 427.

Arsenoso-phosphotungstates, 427.

Arum italicum, chemical and physiological study of, 94.

Ash of white and green leaves of Quercus rubra, Trans., 839.

Asparagine, 1013.

- a new, 870.

- assimilation of, by plants, 1061.

in hops, 387.

— picrate, **4**53.

Asparagus, occurrence of coniferin and vanillin in, 387.

Aspirator, an, 15.

Assafætida, occurrence of vanillin in,

Atmosphere, carbonic anliydride in, 593.

Atmosphere, spectroscopic examination of the constituents of, 1. - terrestrial, absorption-spectrum of, 189. Atomic and specific volumes, 972. ---- weight and gravitation, 591. Atoms, combinations of molecules with, Atropa belladonna, estimation of alkaloïds in the leaves of, 105. fluorescent constituent of, 156, 577. — new constituents of, 255. Atropine, 632. ---- detection of, 955. --- reaction of, 285. - - with mercurous salts, 632. — tests for, 397. Augite from Dognácska, 513. from Krakatoa ashes, 602.
 from Weiler, near Weissenberg, analysis of, 212. Augite-granites from the Cheviot districts, 520. Aurantiamarin, 577. Auric chloride, 430. - -- compound of, with sulphur and selenium tetrachlorides, 310. Austrium, a new metallic element, 773.Autoclaves for chemical laboratories, 112.Axinite from New South Wales, 774. Azo- and diazo-derivatives, &c., method of investigating the constitution of, Trans., 624. Azobenzene, bromo-, 795, 1024. p-chloro-, 874. ---- dinitro-, 794. ---- o-nitro-, 794. - reaction of benzaldehyde with, 148. Azobenzoic nitrates, 1017. Azobenzoyl carbinol (isatin), 342. Azo-compounds, 943. —— mixed, 62 —— orthamido-, 236. —— with mixed and substituted radicles and their derivatives, 145. Azo-cumene, 459. Azo-derivatives of carvacrol, 59. - -- simple method of preparing, 145. Azo-dye, brown, preparation of, 187. Azo-dyes from diphenyl, Trans., 380. - mixed, synthesis of, from aromatic diamines, 886. ---- new class of, 887. Azonaphthalene and its derivatives. -- β-amido-, 714. Azo-opianic acid, 468,

VOL. L.

m-p-Azotoluene, 795.

o-amido-oxidation of, 236.
Azotometry and the azotometer, 1072.
Azoxybenzene, m-dinitro-, 53.
Azo-xylenes, amido-, 58.
a-Azoxynaphthalene-a-sulphonic acid and its salts, 555.
Azoxyterephthaldehydic acid, 701.
o-Azoxytoluene, 53.

Bacilli, cholera, formation of ptomaines by, 731. Bacillus anthracis, TRANS., 200.
—— tuberculosus, TRANS., 201. Bacteriological research from a biologist's point of view, TRANS., 197. Bacterium aceti, action of, on alcohol, TRANS., 178. - cane-sugar, Trans., 181. carbohydrates, Trans., 179.dextrose, Trans., 179. mannitol, Trans., 182. --- chemical action of pure cultivations of, TRANS., 173. Balsam, copaïba, examination of, 284. Barium chloride, insolubility of, in presence of lithium chloride, 422. chlorobromomethanesulphonate, dibromomethanesulphonate, 786. - hydrosulphide, Trans., 370, 375, ---- hydroxide, hydrated, 850. hydroxyhydrosulphide, TRANS., 369. ---- lactate, 1009. - manganite, 425. - --- formation and dissociation of, 507. - monosulphide, TRANS., 369, 370. silicate, crystallised, hydrated, 594. ----- sulphate, 422. - as a cementing material in sandstone, 35. - sulphur compounds of, TRANS., 369. --- telluryl tartrate, 767. — thiocarbamate, Trans., 370, 378. — titanate, 985. Barley, changes occurring in the germination of, 1061.

- fat, composition of, 1065.

- growth of, from varieties of seed,

- presence of raffinose in, Trans.,

Barley, sugars of, Trans., 58.

Barytes, occurrence of, in the porphyry district of Teplitz, 24.

Basalt, orthoclase in geodes in, 518.

Base, division of, between two acids, 973.

Bases, electrical conductivity of, 585.

—— in jaborandi leaves, 85.

Bassia parkii, gutta-percha from, 249. Batteries, galvanic, cause of irregularities in the action of, 293.

Battery, selenium, 107.

Beans, lupines, and maize, analyses of varieties of, grown under like conditions, 95.

Beegerite, 515.

Beer, detection of salicylic acid in, 924.

estimation of sulphurous acid in, 102.

---- examination of, 493.

Beet, accumulation of sugar in the root of the sugar-, 1063.

Beet-juice, influence of lead acetate on the optical behaviour of certain nonsaccharine substances present in, 111.

— presence of glutamine in, 105.

Beet-residues, fresh and dried, digestibility of, 1054.

Beetroot, absorption of potash and lime from the soil by, during the first year of vegetation, 830.

Beet sugar, determination of the richness of, 283.

development of, 1063.

Beets, sliced preservation of, in silos, 275.

Benzaldehyde, action of ammonium formate on, 1023.

—— green, substituted, 552.

— m-nitro-, action of sodium hydroxide on, 57.

—— reaction of, with azobenzene, 148. Benzallevulinic acid, 241.

Benzalmalonic acid and its mononitroderivatives, decomposition of, by water, Trans., 357.

Benzamide, action of cyanuric chloride on, TRANS., 312.

Benzamides, nitro-derivatives of ethyl and methyl, 546.

Benzamidobenzoic acid and its derivatives, 548.

Benzamtartridic acid, 622.

Benzanilidoimide chloride, action of, on ethyl sodomalonate, 149.

Benzene, action of sodium on bromoderivatives of, 541.

--- constitution of, 613.

- containing thiophen, 692.

Benzene-derivatives, oxidation of, with potassium ferricyanide, 142.

Benzene, estimation of light hydrocarbons, &c., in, 393.

- heat of combustion of, 409, 842.

---- oxidation of, 49.

Benzeneazimidonaphthalene, 244.

Benzenes, chloro-, 229.

Benzenesulphonic acid, o-p-dinitro-, 1030.

Benzenesulphonic anhydride, tribromo-,

----- p-dibromo-, 551.

Benzenetrisulphonic acid, amide and chloride, 623.

Benzenyl ethyl ether, 875.

Benzenylamidoxime, 797.

Benzenylamidophenylmercaptan, 700.

Benzenylanilidoxime, 875.

Benzenylazoximebenzenyl-m-carboxylic acid, 803.

Benzenylazoximethenyl - m - carboxylic acid, 803.

Benzenylazoximethenyl - p - carboxylic acid, 802.

m-Benzenylazoximepropenyldicarboxylic acid, 803.p-Benzenylazoximepropenyldicarboxylic

acid, 803.
Benzenyldicinnylenediamine, Trans.,

Benzenylethylimidoximecarbonyl, 797.

Benzenylimidoximecarbonyl, 797.

Benzenylphenylimidoximecarbonyl, 875.

Benzenyluramidoxime, 797.

Benzenyluranilidoxime, 875.
Benzhydrazoïne and its derivatives,
1026.

Benzidine-azo-dyes, colouring properties of, 947.

Benzidinesulphone, 471.

Benzil, action of aldehydes and ammonia on, Trans., 462.

— action of sunlight on, 888.

— compounds of isopropyl alcohol with, Trans., 832.

Benzilanhydrobenzoyldiamidotoluene, 943.

Benzilbenzoïn, 888.

Benzil-diguanyl, 556.

Benzil guanyl, 556.

Benzilphenylhydrazine, 546.

Benzoic acid, action of hydrogen peroxide on, 801.

amido-, derivatives of, 548.

p-amido-, action of alkyl

— p-amido-, action of alkyl iodides on, 148.
— inversion of cane-sugar by,

932.

---- acids, dichloro-, 452.

Benzoic sulphinide, p-amido- and pnitro-, 804.

Benzoin, action of primary aromatic amines on, 887.

ammonia derivatives of, TRANS., 825.

Benzoïnam, Trans., 825. Benzoïndialdehyde, 876.

Benzoïndicarboxylic acid, 877.

Benzoïnidam, TRANS., 830.

Benzoinimide, TRANS., 825, 828.

Benzoïnphenylhydrazine, 545.

β-Benzoisosuccinic acid, 354, 355.

Benzonitrile, o-nitro-, 63.

Benzophenone, action of ammonium formate on, 1023.

- action of heat on, 865.

---- homologues of, 461. Benzophenonephenylhydrazine, 545.

Benzophenonidene pyrothiophosphite, Trans., 481.

Benzoyl chloride, action of silver cyanurate on, Trans., 313.

Benzoylacetic acid and its derivatives, Trans., 154.

 p-nitro-, and its derivatives, TRANS., 440.

Benzoylamarine and its derivatives,

Benzoylbenzoic acid, m-chloro-, Trans.,

Benzoylbenzylamarine, 238.

Benzoyl-camphylamine, 557.

Benzovlethyl-o-carboxylic acid, 243.

Benzoyl-p-homobenzenylamidoxime,

Benzoylmesitylenic acids, 353.

Benzoyl-β-naphthylamimide chloride,

Benzoylphenone, action of phosphoric sulphide on, Trans., 478.

Benzoylphenylhydrazide, amido-, 1025.

Benzovlphthalic acid, 626,

Benzoylresorcinol, mononitro., 51.

Benzoyl-p-toluidimide chloride, 617.

Benzyl chloride, amido-, 56.

- action of powdered zinc on, 1034.

— compounds, 56.

Benzylacetamide, p-nitro-, 698.

Benzylamarine benzoylchloride, 238. Benzylamine, amido-, and its salts,

m-nitro-, primary, and tertiary, and their amido-compounds, 56. - trinitro-, 615.

Benzylaniline, o-nitro-, and its derivatives, 793.

Benzylbenzenylamine, 796.

Benzylbenzoylamarine, 238.

Benzyldiazoamidobenzene, Trans., 749.

Benzyldimethylamine, m-nitro-, 57.

Benzylenimide, 794.

Benzylidene disulphone, 938.

- m-nitro-, dimethylsulphone, 938.

Benzylidenebenzylimide, 546.

Benzylidenecollidinedicarboxylic acid, 258.

Benzylidenementhylurethane, 893.

Benzylphenol, an isomeric, TRANS., 406.

p-Benzylphenol and its derivatives, TRANS., 406.

Benzylphenylamine, m-nitro-, and mamido-, 57.

Benzyl-p-toluidine, o-nitro-, and its derivatives, 793.

Beresite, 995.

Beryl, composition of, 990.

- from Amelia Co., Virginia, 127.

Beryllium, atomic weight of, 506.

- bromide, vapour-density of, 506. specific heat of, 506.

Berzelîite, 25.

- optical properties of, 127.

Bibasic acids, condensation of acetoacetates and of aldehydes with, 47.

Bicuhyba fat, 139.

- nuts, analysis of, 139.

m-Bidiazobenzene compounds, 459.

Bilberries, analysis of, 953.

Bile acids, 565.

pigments and hæmatin, 638.

Bilianic acid and its methyl and ethyl salts, 566.

Bird's-nest, edible, 635.

Bisilicate, fibrous, from Nelson Co., Virginia, 131.

Bismuth, electrolytic estimation of, 493, 921, 923.

– native, from Bolivia, 514.

- from Sweden, 674.

— sulphate, 513.

basic, 982.

Biuret, 338.

Bleaching liquids, various, 399.

--- powder, arsenic in, 99.

- estimation of active chlorine in, 487.

Blood, non-fermentable reducing substances in, 383.

— of decapod crustacea, 639.

 proteïds of lower vertebrata, 1050. --- stains, formation of iodohæmin as

a method for detecting, 184. - sugar in, with reference to nutri-

tion, 382. Blue, new, for printing, 187.

Bodily labour, influence of, on the discharge of nitrogen, 569.

Boiler incrustation, calcium hydroxide as, 506.

Boiling point and pressure, relations between, 590.

Boiling points, absolute, and specific volumes of liquids, relations between, Proc., 181. - — of ethereal salts of normal fatty acids, 966. — of mixed derivatives, 135. determination of, 497. Bone, bleaching and dyeing, 188. Boracite, crystalline form of, 24. - determination of the refractive indices of, 209. Boric acid and borax, physiological action of, 572. - determination of, in mineral waters, 649. estimation of, 742. Borneen, so-called, 70. Borneol and camphor, 557. - and its derivatives, 70. — constitution of, 336. — inactive, synthesis of, 365. Bornite, artificial production of, 208. - from New Mexico, microscopic character of, 22. Bournonite, 312, 314. artificial production of, 208. — from Chile and Bolivia, 431. Bornyl chloride, 70. Boyle's law, deviation of oxygen from, at low pressures, 591. Braken, manurial value of, 485. Branchville mica, 129. Brandy from wine, 436. Bread, fermentation of, 185. Bromides, detection of, 833. - organic, action of chlorine and bromine on, 929. - inorganic, action of iodides on, 434. Bromine, absorption of, by different substances, 119. and iodine, separation of, 279. — detection and estimation TRANS., 682. estimation of, by Field's method, — free, naphthol as a reagent for, 97. -- hydrate, dissociation of, 117. - iron compounds as carriers of, melting and boiling points of, TRANS., 454. - physical properties of, 849. proportion of, in sea-water, 134. —— purification of, 592. Brookite from Magnet Cove, Arkansas, 989.

Brucine, nitro- and amido-derivatives of, 564. Bunsen's ice calorimeter, modification Burner, simple, for monochromatic light, 14. Butter analysis, 283. - fat, Reichert's method of examining, 583. test for adulterations in, 103, 395. Butters, examination of, 685. Butyl chloracetate, 784. derivatives, normal and primary monochloro-, 215. - methyl ketone, bromo-, preparation of, 219. - nitrite, tertiary, 218. - phenyl ketone, TRANS., 161. - salts of normal fatty acids, boiling points and specific volumes of, 960. Butylene hydrate, decomposition of, by heat, 137. Butylphenylamine, normal, 263. Butyramide, γ-chloro-, 216. Butyramidobenzoic acid, 548. Butyric acid, γ -bromo- and γ -iodo-, 440. - --- γ-chloro-, and methyl and ethyl salts of, 216. $- \longrightarrow a - \beta$ -dichloro-, 1007. - chloride, chloro-, normal primary, 216. Butyrolactone, preparation of, 216. Butyrone, preparation by Perkin's method, TRANS., 322. Butyronitrile, y-chloro-, 215. Butyryl chloride, α - β -dichloro-, 1007.

C.

Cacodylic acid, action of, in the animal economy, 730.

Cadmium and iodine, measurement of the electromotive forces produced by the combination of, in presence of water, Trans., 700.

— electrolytic estimation of, 921, 923.

---- peroxide, 305.

---- separation of, from zinc, 281.

— ultra-violet spectrum of, 957.

zinc, nickel, copper, &c., separation and estimation of, 580, 650.

Caffeine methhydroxide, 899.

Calamine, 896, 989.

Calcite, Andreasberg, crystal forms of, 209.

pseudomorphs, after aragonite, 431.

Calcium acetate, valuation of, 747.

—— carbonate, dissociation of, 760.

Calcium carbonate, fusibility of, 676.

detection of, in presence of strontium, 920.

--- crystalline form of, 120.

—— malates, 870.

---- manganite, 425.

phosphate, production of, in connection with the Thomas process, 926.

----- saccharate, tribasic, power of certain salts to decompose, 185.

- silicate, artificial, 517.

----- sulphate, reduction of, by certain anaërobic ferments, 573.

Calorimeter, Bunsen's ice, corrections for, 409.

Calorimetric study of salts, sources of error in, Proc., 198.

Camphene, 70. Camphol from valerian, 1040.

Camphols and camphors, isomerism of,

Camphophenylhydrazine, 72.

Camphor, 557.

---- constitution of, 336.

---- cyano-, 891.

derivatives, crystallography of, 248.

—— derivatives of, 808.

--- nitro-, and its derivatives, 1039.

— oils, natural, 72. — oxidation of, 249.

Camphoronic acid, 156.

Camphylamine, 249.

---- dithiocamphylcarbamate, 557.

---- salts, 557.

Camphylphenyldihydrazine, 808. Camphylphenylthiocarbamide, 557.

Camphylthiocarbimide, 558.

Canarine, preparation of, 186.

Cancrinite from Litchfield, Maine, 677.
Cane-sugar, influence of neutral salts and of temperature on the inversion of, by acids, 502.

wines, 608.

inverting ferment of, 169.

Cantharadic acid, 723.

Cantharadin, 723.

Cantharic acid, 723.

Cantharidoxime, 723. Cantharidoximic acid, 723.

Cantharoximic acid, 723.

Caoutchene, 890.

refraction and dispersion equivalents of, TRANS., 618.

Cappelenite, 35.

Capramidoxime and its derivatives, 785.

Caproic acid, electrolysis of, 1008.

Capronitrile, action of hydroxylamine on, 784.

Carbamide, action of alcoholic potash on, 691.

- action of nitrous acid on, 747.

Carbamides, aromatic, behaviour, of at high temperatures, 876.

--- substituted, action of alcoholic potash on, 691.

Carbamine-β·thiolactic acid, imido-, 226. Carbamineyanamide and its derivatives,

Carbanilidobenzoïn, 342.

Carbanilidoisatin, 342.

Carbodinaphthylimide, 1035.

Carbohydrate from the seed of Lupinus luteus, 608.

Carbohydrates, action of Bacterium aceti on, Trans., 179.

formation and migration of, in leaves, 826.

—— heats of combustion and formation of, 757.

— in carnivorous animals, formation of fat in, 482.

--- influence of, on the putrefaction of proteïds, 729.

oxidation of, by means of chromic acid, 102.

---- some, sulphates of, 44.

Carbon and hydrogen, determination of, by means of copper oxide asbestos, 580.

— bisulphide, carbonic anhydride, and sulphurous anhydride, reactions with, 16.

— vapour, absorbents for, 16.
— velocity of light in, 957.

— compounds and mixtures of, electrical conductivity of, 191.

decomposition of, by the electric spark, 10.

volatile, and electrolytic gas, explosions of, 762.

estimation of, in iron and steel, 98.

oxidation of, in the electrolysis of

—— oxidation of, in the electrolysis of aqueous ammonia, 406.

—— of various forms of, 202.

— thermo-electric position of, 295.

Carbonates, aromatic, 789.

Carbonic anhydride, absorption of, by leaves, 1062.

action of hydrogen on, in contact with red-hot platinum, TRANS.,

in the expiration of, 1052.

- amount of, in the air, 501.

| Carbonic anhydride and hydrogen, | Carrotene, 711. |
|--|---|
| action of induction sparks on, Trans., | Carvacrol-derivatives, 346. |
| 104. | Carvacrolbidiazotriphenylmethane, 59. |
| apparatus for the preparation | Caseïn-peptone, 1051. |
| of, 184. | Catalytic action of glass, 591. |
| behaviour of, towards hydro- | Catechoquinone, 696. |
| gen at a high temperature, 16. | Cattle foods, composition of, 1066. |
| carbon bisulphide, and sul- | Caucasian petroleum, aromatic hydro- |
| phurous anhydride, reactions with, 16. | carbons in, 142. |
| characteristic equation of, | Cedrenes, refraction and dispersion |
| 203. | equivalents of, Trans., 618. |
| | Celestin, treating, 108. |
| derivatives of, 611. | Cell nucleus, chemistry of, 566. |
| dry, action of, on the alkaline | Cellulose, action of sulphuric acid on, 44. |
| earths, 927. | - an acetic ferment which forms, |
| | Trans., 432. |
| | —— digestion of, 86, 87. |
| 577, 932. | effect of, on the decomposition of |
| in the atmosphere, 593. liquid, preparations and uses | proteïd in the nutrition of herbivora, |
| | 728. |
| of, 107. | —— estimation of, 954. |
| new apparatus for estimating, | —— formation of methane and car- |
| in the air, 835. | bonic anhydride from, 577, 932. |
| | —— in Protozoa, 640. |
| reduction of, by potassium | — occurrence of, in Mycoderma aceti, |
| cyanide, 1000. | 732. |
| Carbonic oxide, action of, on lead and | Cement, setting of, 851. |
| silver chlorides, 17. | Cerealose, Trans., 73. |
| with red-hot platinum, Trans., 97. | Cereals, some, sugars of, TRANS., 58, and |
| in presence of | Proc., 142. Cerous chloride, anhydrous, 123. |
| potash, Trans., 101. | oxychloride, 123. |
| and hydrogen, combustion of, | Cerium molybdate, 595, 772. |
| Trans., 94. | oxides, 424. |
| and steam, action of induc- | silicate 123 |
| tion sparks on, Trans., 103. | —— silicate, 123. —— tungstates and chlorotungstates, |
| ——— reaction between, 120. | 595. |
| reaction between, 120. combustion of, 664. elimination of, after partial | — tungstates and molybdates, 981. |
| elimination of, after partial | Chabasite group, 318. |
| poisoning, 641. | Charcoal, animal, estimation of lime in, |
| - incomplete combustion of, in | 1075. |
| presence of varying quantities of | Cheese, inorganic constituents of, 290. |
| steam, TRANS., 104, 109. | —— poisonous, ptomaïne from, 373. |
| preparation of, by aid of zinc- | Chelidonic acid, 868. |
| dust, 660. | Chelidoninic acid, 869. |
| water and oxygen gases, | Chemical change, rate of, as a function |
| theory of the interaction of, a note on | of temperature, 301. |
| Mr. H. B. Dixon's paper on the action | rate of, between iodic and |
| of carbonic oxide on steam, TRANS., | sulphurous acids, 658. |
| 112. | retardation of, 502. use of the electric light to in- |
| Carbophenyltolylimide, 1035. | use of the electric light to in- |
| Carbopyrotritartarie acid, constitution | fluence, Proc., 182. |
| of, 225. | decomposition, transition tempera- |
| Carbopyrrylglyoxylic acid, 719, Carbostyril, 244. | ture in, 968. |
| Carboxydimethylprrolylacetic acid, 332. | energy and current energy, equi- |
| Carica papaya, latex of, 1060. | valence of, 840. |
| Carmine, adulterations of, 399. | 196. |
| —— <i>a</i> -bromo-, 252. | |
| β-bromo-, 253. | phenomena of, 762. |
| β -bromo-, 253. red, 252. | Chemistry and physics, relations be- |
| Carrot, cholesterin in, 830. | tween, 961. |
| | |

Chenevixite from Utah, 517.

Chicory root, analysis of, 388.

Chili saltpetre or ammonium sulphate as manure, 646.

Chitin, solubility of, 808.

Chloral, anhydrous, action of chlorine on, 221.

-- ethyl alcoholate, vapour-densities of, Trans., 685.

hydrate, action of potassium chlorate on, 331.

phosphide with, 684.

thiobenzamide, 1026.

Chlorates action of on motallic are

Chlorates, action of, on metallic evaporating pans, 184.

- detection of, 392.

Chlorethers, 606.

Chlorhydrins, action of nitromethane on, 862.

Chloride of lime, estimation of, by means of hydrogen peroxide, 738. Chlorides, acid, action of, on inorganic

compounds, 222.

decomposition of, in dilute solutions, 975.

- detection of, in presence of bromides and iodides, 179.

organic, action of inorganic iodides on, 434.

--- variations of the solubility of, in presence of hydrochloric scid, 505, 972.

Chlorination, new method of, 231.

Chlorine, action of, on nitric peroxide, Trans., 226.

Trans., 682.

— direct determination of, in presence of bromine, 648.

—— estimation of, by Field's method, 833.

--- free, diphenylamine and naphthol as reagents for, 96, 97.

- naphthol and sulphuric acid as a reagent for, 99.

—— hydrate, dissociation of, 117, 299. —— monoxide, 118.

--- volumetric estimation of, 178.

water, decomposition of, in sunlight, 301, 302.

Chlorite from Albemarle Co., Virginia, 130.

Chloritoid containing manganese, 129. Chloroform, action of ammonia and water on, 521.

—— preparation of, 999. Chlorophyll, 476.

Chlorophyll, action of, on carbonic anhydride when removed from vegetable cells, 254.

— activity of, under the ultra-violet rays, 387.

and the reduction of carbonic anhydride by plants, 626.

of the activity of, 92.

— estimation of, 1083.

from the deep sea, 367.

Chloropicrin, reduction of, 323.

Chlorostannic acid, 984.

Chlorozon, 399.

Cholanic acid and its ethyl and methyl salts, 566.

Choleic acid, 270.

Cholera, supposed ptomaines of, 1049.

Cholesterin in vegetable fats, 829.

—— in the carrot, 830. Cholic acid, 480, 952.

methyl and ethyl salts of, 565.

____a new acid analogous to, 270.

Choline, analogues of, 933. Choloïdanic acid, 817.

Chondrodite from Nyakopparberg, analysis of, 29.

Chondrosin, 481.

Chromammonium compounds: a lecture experiment, 849.

Chromates, heat of solution of, 962.

— thermochemistry of, 962. Chromatometer, 1070.

Chrome-iron ore from New South Wales, 774.

Chromic acid, absorption spectra of, 838.

— preparation of, 108.
— chloride, anhydrous, solution of,

oxide, molecular states of, 597.
phosphate, 17.

Chromium, estimation of, 580.

oxides, action of hydrogen peroxide on, 984.

oxychloride, solubility of chlorine in, 500.

- oxyfluoride, 983.

Chromous chloride, conversion into chromic chloride, 597, 669.

Chromyl dichloride, action of ammonia on, Trans., 367.

Chrysatropic acid, 255.

Cincholepidine, synthesis of, 630.

Cinchonidine in quinine sulphate, 813.

— in commercial quinine sulphate,

632.
Cinchonine, action of caustic alkalis on,

Cinchonine, decomposition of, by sodium Cocaïne, salts, 84, 479. ethoxide, 162. Coccerin from living cochineal, 441. Cocethyline, and its platinochloride, Cinnabar, artificial production of, 208. Cinnamaldehyde, action of, on malonic artificial preparation of, 163. acid, Trans., 365. Cochineal, colouring matter of, 252. - condensation of, with ammonia – fat, 441. and ethyl acetoacetate, 257. Cocksfoot grass, analyses of, 909, 912. Cinnamaldoxime, 799. Codeïne, derivatives of, 563. Cohesion and cohesion-figures, 971. Cinnamhydrazoïne, o-nitro-, 1026. Cinnamic acid, bromo-, third isomeric, Coins, nickel, assay of, 101. 703. Coke, determination of nitrogen in, - experiments on the prepara-1071. tion of, by Perkin's method, TRANS., Coking process, the Jameson, 288. Collidine-\beta-carboxylic acid, betain of, - m - nitro - α - bromo, Trans., 361. Colophene dihydride, 1039. — series, isomerism in, 702, 945. Colorimetric determinations, 738. - - synthesis of a sulphur deri-Colouring matters, detection of, in wine vative of, 241. and confectionery, 183. Cinnamylmethylketoxime, 800. Comma bacillus, poisonous product of the culture of, 169. Cinnidimabenzil, TRANS., 472. Cinnimabenzil, TRANS., 471. Conchinine, alcoholates of, 900. Citraconic acid, constitution of, 335. Conchiolin, 481. Citrenes, refraction and dispersion equi-Condensations, inner, 65. valents of, TRANS., 615. Conductivity, electrical, of saline solu-Citrus limetta, essential oil of the leaves tions of mean concentration, 753. of, Trans., 316. Conessine (wrightine), 372, 901. Clays, Hainstadt, absence of rare metals Confectionery, detection of colouring in, 678. matters in, 183. occurrence of rare earths in, Congo red, constitution of, 889. 314. Coniferin in asparagus, 387. Clotting, intravascular, 821. - glucoside allied to, 250. Clover, alsike, analyses of, 911, 912. Conine, constitution of, 563. — American and German, 646. - oxidation products of, 562. Bokhara (Melilotus leucantha), synthesis of, 478. 828. Contact actions, 415. Dutch, analyses of, 911, 912. Capaïba balsam, oxidation of, 250. perennial red, analyses of, 909, Copaline from Hütteldorf, near Vienna, 912.Coal, determination of nitrogen in, 1071. Copper, action on sulphurous acid, 423. — heat of combustion of, 757. arsenate, 771. - tar, blast furnace, an examination - — basic, 771. of the phenol constituents of, obtained - cadmium, zinc, nickel, &c., separaby the Alexander and McCosh process tion and estimation of, 580, 650. at the Gartsherrie Ironworks. Part I. combination of, with nitrogen, 422. TRANS., 17. --- compounds as poisons, 483. - oil boiling between $170-210^{\circ}$; dipyridine sulphate, 857. fractions of, 232. electrolytic estimation of, 921. Cobalt and nickel, separation of, 432, glance, artificial production of, 208. 1077. - in vines treated with copper sul-— atomic weight of, 596. - ores from New Caledonia, 320. phate and lime, 738. metallic, estimation of arsenic in, Cobra, venom of, 1057. 100, 920. Coca leaves, 388. - nitrates, basic, artificial, 315. Cocarcine, 85. ore, variegated, from New Mexico, Cocaïne, 84, 388, 479, 632, 951. microscopic character of, 22. - and its homologues, artificial preores, treatment of, with molten paration of, 163. lead, 109. oxide, modifications of, 666. - benzoate, 633, 951. estimation of, 1087. precipitating, by electrolysis; and the electrolytic purification of, 109.

preparation of, 371.

Copper pyrites, artificial production of, Cryoscopy as a means of determining molecular weights, 197. 208.sulphate, anhydrous, heat of dissolution of, Trans., 294. - compound of methyl alcohol with, 524. - --- hydrated, dissociation of, 842. - monohydrated, heat of dissolution of, TRANS., 310. - --- pentahydrated, heat of dissolution of, Trans., 296. - solubility of, in presence of ammonium sulphate, 305. - transference of, across a stratum of gas, 422. volumetric determination of, 920. --- See also Cuprous. Coprine chloride, 933. Copying paper, new photographic, 106. Corneïn, 481. Corundum in graphite, 23. - optical properties and the microstructure of, 23. Coryllus avellana, pollen of, 736. Cosalite, 515. Cotton cake and meal, digestibility and feeding values of, 272. Coumarinearboxylic acid, Trans., 367. Coumarone-a-carboxylic acids, 706. Coumaroxime and its ethyl ether, 880. Couples, metallic, electromotive force of the currents yielded by, in simple saline solutions, 190. Covelline, artificial production of, 208. Cows, feeding with "sections," 953. Craigtonite from Aberdeenshire, 131. Creatinine, a new, 1046. kynurenate, 1056. estimation of, in urine, 397. picrate, 1056. p-Cresol, dinitro-, and its salts, 152. m-Cresol, 232. - trinitro-, 345. Cresoldisulphonic acid, 151. Cresols, chloro-, 614. Cresorcinolcarboxylic acid, 242. Crested dog's tail grass, analyses of, 909, o-Cresyl ether, TRANS., 28. Critical pressure, so-called, of solids, 656. Croconamic acid, 540. Croconic acid, 449. and its derivatives, 540. Crocydolite, 128. - from the Cape, 603. Crotonaldehyde, action of chlorine on. 1006. Crusocreatinine, 634. Crustacea, decapod, blood of, 639. Cryolite, 430. — from Greenland, 430.

Crystallographical investigations, 341. Crystallography of some organic compounds, 62, 234, 235. Crystals containing mixtures, 972. - do they grow only by juxtaposition of new molecules? 9. o-Cumaroxyacetic acid and its anhydride and dibromide, 66. Cumene, nitro-, 458. Cumenylaerylic acid, m-nitro- and mamido-, 467. – dibromide, 464. - - o-nitro- and o-amido- m-nitro-, 465, 467. Cumenylpropionic acid, m-amido-, 467. Cumic acid, 944. o-nitro- and o-amido-, 466. Cumostyril, 465. Cumyl series, the propyl-group in the, 452.Cuprammonium hexiodide, 852. — iodides, new, 851. - tetriodide, 852. Cupreine and its salts, 83. Cuprous chloride, preparation of, 771. Currents yielded by metallic couples, electromotive force of, in simple saline solutions, 190. Curare, influence of, on the glycogen of liver and muscle, 1054. Cyanacetophenone, 240. Cyanhydrin of levulose, 219. Cyanic acid, normal, derivatives of, 38. Cyanidine, methamidodiperchloro-, 324. Cyanogen bromide, additive compounds of normal ethyl cyanurate with, 38. - melting and boiling points of, 38. — — polymeride of, 216. – polymerisation of, 859. reaction of, with ethyl alcohol, 859. combustion of, Trans., 384. compounds, additive products of, 217. estimation of, by Field's method, 833. - refraction of, 837. Cyanovalerolactone, 533. Cyanuric acid, constitution of, 41, 216. - derivatives of, 325, 860. - normal, 38. acids, constitution of, 932. - supposed isomeric, Trans., 693, 743. - bisulphide, 325. - derivatives, TRANS., 739. - crystallography of, 929. ethers, 929. – chloride, 1001, TBANS., 739.

Cyanuric chloride, action of ammonia Density of nitrous oxide, ethylene, and and amines on, 38. - benzamide on, TRANS., 312. —sodium formate, benzoate, and acetate on, TRANS., 311, 312. — iodide, 1001. — monochloro-, 1001. — trithioglycollic acid, 325. Cyclamiretin, 366. Cyclamose, a new sugar, 782. Cyclothraustic acid, 950. Cymene, dinitrobromo-, 1016. - hydrochloride, p-diamido-, 240. — nitration of, 1017. --- nitro-bromo-, 1016. — nitro-, so called, **542.** — oxidation of, 541. --- presence of, in resin spirit, 939. - series, the propyl-group in the, 452. Cymenesulphonic acid, bromo-, 470. — acids, α- and β-, 884. — bromo-, 1032. Cymenol, tribromo-, 697. Cymenotic acid, 696. Cymenyl ethyl ether, 696. - methyl ether and its nitro-derivative, 696. Cymidinesulphonic acid, 470. Cymylcarboxylic acid, 463. Cyst, liquid from, 1055. D. Danaïdin, 173. Danaïn, 173. Danais fragrans, root of, 173. Daniell's battery, electromotive force of certain dry forms of, 3. Daphnetin, ethyl and methyl derivatives

of, 558. Daphnidium cubeba, fruit of, 1064. Decyl iodide, 998. Dehydrocholeic acid, 270. Dehydrocholic acid, 952. - trialdoxime, 952. Dehydrodiprotocatechuic acid, 239. Dehydrodivanillin, 238. Dehydromorphine, 899. Dehydrophotosantonic acid, 74. Delokanic acid, 255. Denitrification, 823, TRANS., 667, 681. - and nitrification, alternate, Trans., Density numbers, law of, 194, 410. - - extension of the law of, to a

case in thermochemistry, 498. - of liquefied air and its constituents,

661.

carbonic anhydride, 758. Deoxycholic acid, 481. Deposit from the spring at Chabetout, Descloisite from New Mexico, 26. Deuteroglobulose, 819. Dextrins, conversion of glucoses into, Dextropimaric acid and its derivatives, 1039.Dextrose, action of Bacterium aceti on, TRANS., 179. - action of hydrocyanic acid on, 526. - constitution of, 526. heptolactone from, 526. Dextrosecarboxylic acid, constitution of, 687. $a-\delta$ -Diacetadipic acid, 936. Diacetonephenylphosphinic acid, 609. Diacetonetolylphosphinic acid, 609. Diacetonamine, 528. Di-p-acetoxyisohydrobenzoin, 460. Diacetylcupreïne, 84. Diacetylmaleïnfluoresceïn, 51. Diacetylresorcinol, mononitro-, 51. Diallage from Lower Silesia, analysis of, 212. Diallylacetic acid, magnetic rotation of, Trans., 212. Diallylmalonic acid, magnetic rotation of, TRANS., 211. Diamines, aromatic, general method for determining the constitution of, 625. --- synthesis of mixed azo-dyes from, 886. Diamonds, occurrence of, in Borneo, 674. Diamyl dichloroglycollate, 786. Dianthranyl, 248. Diaphragms, relative permeability of, Diastase, 1061. Diastatic action, determinations of, 483. activity, determination of, 386. Diazoamidobenzene, p-dinitro-, Trans., 626. - preparation of, 943. o-Diazoazotoluene-derivatives, 795. Diazobenzeneanilide, constitution of, and its relation to amidoazobenzene, TRANS., 746. Diazobenzenebenzylanilide, Trans., 749. Diazobenzenemethylanilide, Trans., 748. Diazoethylamidobenzene, p - dinitro-,

TRANS., 630.

Diazonaphthalenimide, 555. β-Diazonitroso-oxindole chloride, 64.

pounds from, 235.

Diazovinylamine, 635.

Diazophenols and β -naphthylamine, com-

Diazophenolsulphonic acid, chloro-, 1019.

Diazotoluenedisulphonates, 150.

Diazo-xylenesulphonic acids, 356. Dibenzoyldicumylenediamine, TRANS., Dibenzoyldinitro - m - hydroxyphenyl - ptolylamine, 456. Dibenzoylresorcinol, mono- and trinitro-, 50, 51. Dibenzylhydroxylamine-derivatives, 796. Dibenzylmethylamine, metanitro-, 56. Dibutyrilmonoxime, 877. β - γ -Dicarboxy- γ -valerolacetone, 1012. Dichloralphosphine and its derivatives, 684. Dichlorhydrin-aluminium chloride, 143. Dicoumarin, a, 47. Dicyandiamide, constitution of, 217. Dicyanic acid, amido-, 435. Dicyanothiophen, 339. Dicyanphenylhydrazine, derivatives of, Didymium, spectrum of, 837. - tungstates and molybdates, 981, $p ext{-} ext{Diethamidobenzaldehyde, 458.}$ Diethamidohydroxyphenyltrichlorethane hydrochloride, 458. Diethoxymethane, 43. Diethoxypyridine and its salts, 76. Diethoxy-p-toluquinoline, monochloro-, 160. Diethyl cyanurate, 217. - dichloroglycollate, 1011. - diphenylenedicarbamate, Trans., 256. Diethylamine, chloro-, 796. Diethylaniline, m-nitro-, 347. Diethylbenzenes, chlorinated, 231, 343, Diethylcyanuric acid and its salts, 216. Diethyldaphnetilic acid, 558. Diethyldaphnetone, 558. Diethylene disulphide, compounds of, - constitution of, Trans., 234. - --- preparation of, Trans., 235. Diethylene sulphide methyl-sulphinehydroxide, Trans., 247. - salts, Trans., 237. Diethyleneditolyldiamine, 886. Diethyliodamine, 45. Diethyl-m-nitraniline, 544. Diethyl-m-phenylenediamine, 347. α - γ -Diethylpyridine, 159. Diethylthiophen, 535. Diethyl-o-toluidine, 57. Diethylumbellic acids, α - and β -, 881. Diffusion, gaseous, lecture experiment on, 591. Digesters (autoclaves), high pressure, for chemical laboratories, 112. Digestion experiments, 380.

gastric, during deprivation

chlorine, 1052.

intestines, 379. - – pancreatic, 729. - papaïn, 641. - physiology of, 727. Diheptyl, 998. Dihexamethylenamine methyleniodide, 863.Dihydrocoumaroxime, 880. Dihydro-oxytoluquinoxaline, 82. Dihydrostrychnine, 815. Dihydroxydiquinoline, 949. Dihydroxydurylic acid, 241. Dihydroxyethenylphenylenediamine, Dihydroxyglutaric acids, α - γ -, and β - γ -, Di-p-hydroxyisohydrobenzoïn, 460. Dihydroxyphenylacetic acid, 802. Dihydroxypyridine, 76. a-Dihydroxyquinoline, 629. β-Dihydroxyquinoline, 629. Dihydroxyquinone, 1028. *p*-dinitro-, 1021. Dihydroxystearic acid, 140. Diketones, action of hydroxylamine on, hydroxylamine reaction for, 350. β -Dimethacrylic acid and its salts, 140. Dimethoxyanthranilcarboxylic acid, 468. Dimethoxycinchoninic acid, 479. Dimethoxy-diethyl-acetone, Trans., 57. Dimethyl amidocyanurate, 930. α - β -Dimethylacroleïn, 783. α-β-Dimethylallylic alcohol, 784. Dimethylamidocyanuric acid and chloride, 40. Dimethylamidophenol, dinitro-, and its derivatives, 235. Dimethylamine chlororhodate, 311. Dimethylaniline, m-amido-, 941. - nitration of, 543. - m-nitro-, 347, 941. - nitroso-, action of hydrochleric acid on, 941. Dimethylaniline-furfural hydrochloride, Dimethylanilin-isatin, 155. Dimethylanthrachrysone, 556. Dimethylanthraquinone, α-meta-β-, 557. Dimethylanthraquinonecarboxylic acid, 1029.m-Dimethyl-o-benzylbenzoic acid, 1029. Dimethylcoumarilic acids, 706. Dimethylcoumarone, 706. Dimethyleyanuric acid, normal, 929. Dimethyldi-p-tolyl-m-phenylenediamine, 456. Dimethyldi - p - tolyl - p - phenylenediamine, 457.

Digestion, gastric, in the horse, 952.

of various foods in the human

– in rhizopods, 1053.

Dimethylenethane, preparation and oxidation of, TRANS., 81. Dimethylethyleneglycol mononitrite, 1034. a·β-Dimethylglyceric acid, 1009. a-β-Dimethylglycidic acid, 1009. Dimethylhydroxypyrimidine, 46. Dimethylhydroxyquinoline, 630. Dimethylindole, 805. Dimethylindoleacetic acid, 806. Dimethylindolecarboxylic acid, 806. Dimethyliodamine, 44. Dimethylisocyanuric acid, 930. Dimethylisosuccinamide, 449. Dimethylmaleinfluorescein, 51. Dimethylmalonamide, dinitro-, 449. Dimethylnaphthaquinoline, 370. Dimethyloxamide, dinitro-, 448. m-p-Dimethylphenyl methyl ketone, Dimethyl-m-phenylenediamine, 347. Dimethylphenylglyoxylic acid, 463. 2: 6-Dimethylpyridine, 558. m-Dimethylpyrrylbenzoic acid, 559. o-Dimethylpyrrylphenol, 559. 2': 4'-Dimethylquinoline and its derivatives, 629. - from p-xylidine sulphate, 161. Dimethylquinolines, 260. Dimethylsuccinic acid, an oxidation product of copaïba balsam, 250. symmetrical, 1012. Dimethylthalline iodide, quaternary, 80. Dimethylthionoline, 55. Dimethylumbellic acids, α - and β -, 880. Dinaphthyl phenyl carbinol, 947. Di-a-naphthylamidocyanuric chloride, Trans., 315, 740. β-Dinaphthylamine, 947. Dinaphthylcarbazole, 246. β -Dinaphthylcarbazole, 1036. Dinaphthylene ether, 247. Dinaphthyline, 245. Dinicotinic acid, 478. Dinitriles, normal, 860. Dioctyl, 998. Diopside varieties from Nordmarken, 776. Dioxydimethylaniline, 792. Dioxythiodiphenylimide, 55. Dioxytrimethylpyrroline, 528. Dipentene tetrabromide, 71. Diphellandrene, 1038. Diphenanthrylazotide, conversion of ditolaneazotide into, Trans., 843. Diphenethyloximide, 874. Diphenethylthiocarbamide, 873. Diphenyl, action of organic chlorides on, in presence of aluminium chloride,

diphenylenedicarbamate, TRANS.,

1033.

256.

Diphenyl glyceryl ether, symmetrical, Diphenylacetonitrile, 1034. Diphenylamine as a reagent for free chlorine, 96. as a reagent for nitrates and nitrites, 99. oxidation of, 1023. Diphenylamine-fumaride, 621. Diphenylasparagine, 621. Diphenylazophenylene, 1023. Diphenylene diisocyanate, Trans., 255. Diphenylenediurethane, Trans., 256. Diphenylethane, unsymmetrical action of nitric acid on, 1033. Diphenylfumaramic acid, 792. Diphenylfurfurandicarboxylic acid, Trans., 168. Diphenylguanidine, 338. Diphenylhydrazine cyanuric chloride, Trans., 742. Diphenylindole, 806. Diphenylphthalylasparagine, 621. Diphenylquinolylmethane, 561. Diphenylsilicon dichloride, 619. Diphenylsulphonic acid, p-amido-, Trans., 380. Diphenylsulphone-dimethylacetone,801. Diphenylstibic acid, 885. Diphenylstibine chloride, 885. Diphenylthiënylmethane, 787. Diphenyltoluylene dicarbamate, Trans., Diphenyl-m-toluylenediamine and its derivatives, 873. Diphenyl-p-tolylguanidine, 1036. Diphenylurethane and its derivatives, 59. Diphenylvinyl nitrite, 1034. Diphthalsuccinanilide, 244. Diphthalsuccinhydranilide, 244. Diphthalyl bromide, crystalline form of, nitro- and tetrachloro-, 882. Diphthalylimide, 883. Dipiperidyl and its derivatives, 161. Dipropyl dichloroglycollate, 786. Dipropylamine, 1005. nitroso, 1005. reactions in aqueous solution with metallic salts, 1005. Dipropylaniline, nitroso-, cyanhydrin of, Dipseudacetopyrroline and its mononitro-derivative, 74. Dipseudocumenol, dibromo-, 144. melting point of, 144. Dipseudocumenyl methyl ether, melting point of, 144.

Dipseudocumidine and its derivatives,

Dipyridines, reactions of, 898.

Dipyridyl, 477. β-Dipyridyl, 78. Diquinoline, 1045. a-Diquinoline, 950. Diquinoline [2':2'] derivatives, 949. Diquinoline- β -disulphonic acid, 950. Diquinolinesulphonic acids, 949. studies of, Disinfectants, methods, 573. Disinfection, chemical products of putrefaction in their relation to, 112. Dissociation, contact actions in, 9. of calcium carbonate, 760. - of compounds of hydrogen bromide and ammonia, 500. — of liquids, 499. - of nitrogen peroxide, 657. — of the hydrate HBr,2H₂O, 501. Dithiacetoneacetic acid, 938. Dithiacetophenoneacetic acid, 938. Dithiacetylbenzaldehyde, 938. Dithiobenzaldehydeacetic acid, 937. Dithiobenzoplienoneacetic acid, 938. Dithiocarbamide dichloride, TRANS., 191. --- diiodide, Trans., 195. --- dinitrate, Trans., 194. Dithiocarboxyltriphenylenediamine, 1024.Dithiocinnamaldehydeacetic acid, 937. Dithiocyanuric acid, 325. Dithiodimethylaniline, 792. Dithio-o-hydroxybenzaldehydeacetic acid, 937. Dithio-m-nitro-benzaldehydeacetic acids, Dithionic acid, formation of sulphuric acid in the preparation of, 978. Dithiophenylphenylacetic acid, 879. a-Dithiophenylpropionic acid, 878. y-Dithiophenylvaleric acid, 879. Dithiopyruvacetic acid, 938. Ditolane-azotide, Trans., 829. conversion of, into diphenanthrylene-azotide, TRANS., 843. Di-p-tolyl-m-phenylenediamine and its derivatives, 456. Di-o-tolyl-p-phenylenediamine, 942. Di-p-tolyl-p-phenylenediamine and its derivatives, 457. Di-o-tolylcarbamide, 886. Ditoluylenediamidocyanuric chloride, Trans., 741. Diundecylenic acid, 1011. Diuretics, new, 485. Di-p-xylyl carbinol, 464. ketone, 463. Dolomite from the coal-measures, 775. Double nitrates of silver and the alkalis,

salts of ferric chloride with other

metallic chlorides, 124.

Double sulphates, modifications of, Parts I and II. Part II. Specific heat-determinations, TRANS., 1, 12. Doundaké, or African quinine, 267. Drops, dependence of the size of, on external influences, 844. Drying apparatus, 417. Duodecylamine and its saits, 685. Durene, [1:2:4:5], 232. - action of phosphoric chloride on, 679. action of sulphuric acid on, 694. derivatives of, 64, 67. — tetrachloro-, 1016. - --- symmetrical, 679. Durenedisulphonamide, 695. Dureneglycerol, 679. Durenesulphonamide, 67. Durenesulphonic acid, 67, 694. ---- chloride, 67. Durenol and its derivatives, 68. Duroquinone, 65. Duroquinonecarboxylic acid, 241. Durylic acid, derivatives of, 64, 241. Durylsulphone, 67. Dust explosions, 404. Dye, brown, preparation of, 187. Dyes derived from the quinoline bases, 82. influence of substituted elements and radicles on the shade of, 942. - new, preparation of, 290.

E.

— obtainable from the tannins, 403.

Dysprosium, 667.

Edenite (hornblende) from Greenland, 519.

Edible earth from Bolivia, 514.

Effluviography, 959.

Eggs, hen's, occurrence of peptone in, during incubation, 166.

Eisenkobaltkies, v. Kobell's analysis of, 209.

Elæolite from Litchfield, Maine, 677.

Elaidic acid, oxidation of, with potassium permanganate in alkaline solution, 140.

Elastin, digestion of, with pepsin, 270.

— peptone, 270.

Electric accumulators, 106.

— batteries, dry, electromotive force of, 3.

— light use of, to influence chemical

change, Proc., 182.
Electrical conductivity of aqueous solu-

tions of potassium chloride, 653.

of mixtures of, 190.

and ether, 115.

Electrical conductivity of mixtures of salts, 839.

of supersaturated salt solutions, 654.

---- furnace, 401.

Electrification of ice by water friction, 960.

Electrochemical investigations, apparatus for, 653.

Electromotive force of certain tin cells, 752.

fluence of temperature on, 587.

---- forces developed during the combination of zinc and iodine in presence of water, 751.

Electrolysis, quantitative chemical analysis by, 921.

— secondary, 654.

Electrolytes, coefficient of conductivity of, in very dilute solutions, 113.

—— composite, 754.

influence of pressure on the resistance of, 586.

— thermoelectric relations of, 960. Electrolytic conduction and molecular composition, correlation of, 754.

—— decomposition, 294.

gas and volatile carbon compounds, explosions of, 762.

Ellonite from Aberdeenshire, 131.

Embolite, 988.
—— from Australia, 430.

Emery, analyses of, 675.

Emetine, estimation of, 1086.

Empholite, a new mineral from Horrsjöberg, in Wermland, 31.

Emplectite from Rézbánya, 126.

Endlichite from New Mexico, 26.

Ensilage, comparison with hay as fodder, 737.

Enstatite from the enstatite-porphyrite of the Cheviot Hills, analysis of, 211. Epidote from Rowe, Massachusetts, 23. Epsomite from the Falu Mine, 25.

from the Peychagnard anthracite mine, 516.

Equilibrium, conditions of, in aqueous solutions, 12.

— in the reaction of hydrochloric acid on antimony trisulphide, and of hydrogen sulphide on a solution of antimony trichloride, 20.

Erbia from Brazilian xenotime, 676.

----- spectra of, 749.

Ericalco from Vesuvius, 600.

Erythroxyline, 85.

Erythroxylon, alkaloïds from, 85. Essential oils, III, their specific refractive and dispersive energy, Trans.,

609. testing, 394.

Ethane sulphonimide, TRANS., 490.

Ethenyl trisulphide, 1000.

Ethenylglycollic acid and its salts,

Ethenyltoluylenediamine, 545.

Ethenyltriamidotoluene and its acetyl derivative, 545.

Ether and ethyl alcohol, electrical conductivity of mixtures of, 115.

---- examination of, 1079.

expansion of, at various pressures, 498.

Ethereal oils, 70.

- salts of nitrous acid, 217.

— vapour-densities of, 299. Etherification by double decomposition,

Ethinediphthalide, nitro- and dinitro-,

Ethoxalic chloride, 1011.

Ethoxyacetamide, action of bromine on,

p-Ethoxycoumarilic acid, 881.

Ethoxyethylacetone, 1011.

p-Ethoxyhydrocoumarilic acid, 882.

Ethoxyhydroethylquinoline, dinitro-Trans., 509.

---- ethiodide, TRANS., 505.

Ethoxyhydroethylquinolium hydroxide, Trans., 505.

Ethoxyhydroxypyridine, 76.

Ethoxymethylacetone, 1011.

Ethoxypyridine, 77. Ethyl acetate, 440.

acetoacetate, action of carbamides on, 443.

acetaldehyde and ammonia on, 258.

- and its derivatives, 1009.

tone, 333.

acetosuccinate, action of hydrocyanic acid on, 1012.

— acetylallophanate, 357.

- alcohol, action of Bacterium aceti on, Thans., 175. Ethyl alcohol and ether, electrical conductivity of mixtures of, 115. hydrated magnetic rotation of, TRANS., 780. — —— isonitroso-, 999. - - vapour-pressures of, TRANS., 762, 768, 771, 773. allylacetate, magnetic rotation of, TRANS., 213. -- allyl-p-nitrobenzoylacetate,Trans., 451. amidothiocyanurate, 523. anilobenzenylethylmalonate, 150. — anilobenzenylmalonate, 150. azopyromellitate, 64. benzenylamidoxime-m-carboxylate, - benzoylcyanacetate and its salts, **24**0. - benzoylhomoconate, 562. ---- benzylidenecollidinedicarboxylate, benzilidenediacetoacetate, and the action of bromine on it, 77. benzylidenedihydrocollidinedicarboxylate, 257. γ-bromisocaproate, 531. bromocinnamate, conversion into ethyl benzoylacetate, 703. - bromopropylacetoacetate, preparation of, 218. - bromopyromucate, 447. — butanetetracarboxylate, 934. camphocarboxylate, 249. carbacetoacetate, 1011. carbamate, a new hypnotic, 572. — α -carboxyl- β -acetylglutarate, 336. carboxydimethylpyrrolylacetate, 332. ---- chlorethylacetoacetate, 1010. ---- chlorimidocarbonate, 611. ---- γ-chlorisocaproate, 531. ----- ehlorolevulinate, action of, on ethyl sodomalonate, 336. $-\beta$ -chlorophthalate, Trans., 529. - cyanacetoacetate, 46. - cyanobenzoate, m- and o-, 803. cyanurate, action of phosphorus pentachloride and of ammonia on, 216. - --- normal, additive compounds of, with cyanogen bromide, 38. dehydrobenzylidenediacetoacetate, 77. dehydrodiacetylacetonedicarboxylate, 333. - dehydrophotosantonate, 74.

— diacetadipate, 936. – diacetofumarate, 141.

619.

α-β-diacetoglutarate, 332.

diacetosuccinate dioxime, 877.

diacetotartrate, crystalline form of,

Ethyl diacetyltetramethylenedicarboxylate, 937. · diallylmalonate, magnetic rotation of, TRANS., 209. - diamidocyanurate, 931. diamidodiethylideneadipate, 936. p-diamidoterephthalate, 445. diamidothiocyanurate, 524. - dianilobenzenylmalonate, 150. dichlorethylacetoacetate, 1010. diethylacetoacetate, action of ammonia on, TRANS., 58. - action of phosphorus pentachloride on, Trans., 50. - diethylchloracetoacetate, Trans., action of sodium methoxide on, Trans., 54. diethyldichloracetoacetate, Trans., 54. - action of sodium methoxide on, Trans., 56. dihydroxyphenylacetocarboxylate, dihydroxyquinonedicarboxylate, dimethoxydiethylacetoacetate, Trans., 57. - dimethylphenylpyrrolinecarboxylate, 75. dimethylpyridonedicarboxylate, 334. di-p-nitrobenzoylsuccinate, Trans., diphenylfurfurandicarboxylate, Trans., 167. diphenylizindiacetadipate, 936. dipropyl carbinol, 437. β-dithiophenylbutyrate, 879. - ether, decomposition of the vapour of, by means of the induction spark, 1003. products of the slow combustion of, 327. sp. gr. and refractive index of, 437. - trichloro- and tetrachloro-, 607. ethoxyethylacetoacetate, 1010. ethoxymethylacetoacetate, 1010. ethoxyphenyl-p-tolylamine, 456. — ethyl-p-nitrobenzoylacetate, Trans., 450. - hydrogen lutidinecarboxylate, 719. - sulphate, estimation of, in Rabel water, 1079. hydroisobutyllutidinedicarboxylate, 259. hydroisopropyllutidinedicarboxylate, 259.

hydroparvolinedicarboxylate, 258.

hypochlorite, 607.

Ethyl succinate, 444.

— succinosuccinate, 445.

Ethyl imidocarbonate, 611. – isoamyl quinol, 454. — isobutyl quinol, 454. isobutylbenzoylacetate, Trans., 165. isobutyllutidinedicarboxylate, 260. — isodehydracetate, 1011. -- isocyanurate, 217. isopropylbenzoylacetate, Trans., 164. isothiophenylallophanate, 357. - a-lepidine-β-carboxylate methiodide, 369. —— lutidinedicarboxylate, 259. - malonate, action of sodium on, 223. condensation of formaldehyde with, 691. methoxydiethylacetoacetate, TRANS., 55. methylbenzoylacetate, TRANS., 156. - -a-methyl-γ-chlorocinnamate, Trans., 158. -β-methylcoumarilate, 707. - methyl-α-naphthofurfuranecarboxylate, 717. - methyl- β -naphtho- α -furanecarboxylate, 717. methylphenylpyrrolinecarboxylate, 75. - β-naphthylbenzenylmalonate, 617. - nitrite, estimation of, 279, 392. — p-nitrobenzoylacetate, Trans., 447. nitroso-p-nitrobenzoylacetate, TRANS., 449. ---- oximidocarbonate, 612. – parvolinedicarboxylate, 259. pentanetetracarboxylate, 225. phenacetophenylsodacetate, Proc., 189. - phenethylallophanate, 874. - phenyldimethylpyridonedica**r**boxylate, 334. - phenylhydroxytoluquinolinecarboxylate, p- and o-, 812. - phenylthiocarbonate, 692. - phenylthioformate, 692. propanetetracarboxylate, 691. -- propiopropionate, 334. - propyl quinol, 454. - propylbenzoylacetate, Trans., 160. - α-propyl-β-chlorocinnamate, Trans., 162. quinonedihydro-p-dicarboxylate, 1027. quinonetetracarboxylate, 550. - salts of normal fatty acids, boiling points and specific volumes of, 966.

- sodomalonate, action of benzanil-

idoimide chloride on, 149.

 succinosuccinate, benzene derivatives from, 1028. · --- formation of, from ethyl dihydroxyterephthalate, 706. quinone-derivatives from, 354. re-formation of, from ethyl dihydroxyterephthalate, 550. - sulphide, action of ethylene bromide on, Trans., 249. tartronate, preparation of, 48. tetracetylisosaccharate, 689. tetramethylenetetracarboxylate, 934.- thiodiphenylallophanate, 357. - p-tolylbenzenylmalonate, 617. tolylmethoxyquinizinecarboxylate, trimethylpyridonedicarboxylate. - undecylenate, Trans., 206. - magnetic rotation of, Trans., **2**07. Ethylamarine, 237. Ethylamidoacetocyamidine, a new creatinine, 1046. Ethylamine, nitrification of, by soil, Trans., 633. picrate, 453. Ethylbenzene, pentabromo-, 229. Ethylbenzenes, chlorinated, 343. and their derivatives, 230. Ethylcarvaerol, 346. Ethylchrysoïdine and its derivatives, 543.Ethyldiiodamine, 45. Ethylene, action of aluminium bromide on, 999. - bromide, action of ethyl sulphide on, Trans., 249. changes effected in, by heat, 781. — chloride, action of phosphoric chloride on, 680. density of, 758.
 nitrite, 217. Ethylenecarbamide, 528. Ethylenedibenzenylamidoxime, 797. Ethylenedimethyloxyquinizine, 936. Ethyleneditolyldiamine, 886. Ethylenediurethane, 528. Ethyl-p-ethoxyphenyl-p-tolylamine, 457. Ethylidenephthalide, dinitro-, 620. Ethylidenequinaldine, trichloro-, 264. Ethylmethylenamine, 139 Ethylmethylhydroxypyrimidine, 46. Ethylmethyltoluquinoline and its derivatives, 261. Ethylmethyltoluquinolines, 262. Ethyl-m-nitraniline, 543.

Ethyl-m-nitroparatoluidine, 544. Ethyl - p - nitrophenylnitrosamine, TRANS., 631. Ethyloxalamidobenzoic acid and its

derivatives, 549.

Ethylphenylene-blue, 544. Ethyl-m-phenylenediamine, 543.

Ethyl-p-phenylenediamine, 347.

Ethylpiperidine, 159.

Ethylpropylacetic acid, 441.

Ethylpyridines, α - and γ -, 159.

Ethylpyrroline, 1043.

Ethylpyrrolineazo-β-naphthalene, 1042. Ethylpyrrolineazo-p-toluene, 1042.

Ethylpyrrolinediaozo-p-toluene, 1042.

Ethylquinoline, 263.

Ethylquinolinecarboxylic acid, 263.

α- and β-Ethylsafranine, 348.

Ethyl terephthalyl ketone, 877.

Ethylthalline and some of its salts, 80. Ethylthiënyl hexyl ketone and acet-

oxime, 539. Ethylthiophen, 227.

— bromo-, 538. — limited oxidation of, 534.

Ethylthiophenic acid and its salts, 227.

Ethyl-p-tolindole, 552.

Ethyl-p-tolindolecarboxylic acid, 552.

Ethyl-o-toluidines, 57.

Ethyltoluquinoline, 262.

Ethyltoluquinolinecarboxylic acid, 261.

Ethyl-m-toluylenediamine, 544.

Ethyl-p-tolylhydrazinepyroracemic acid,

Ethylthymolsulphonic acid, 470.

Etna, products of the eruption of, 857.

Eucalyptus manna, melitose from, 527.

Euchlorine, 418.

- from Vesuvius, 600.

Eugenyl carbonate, 789.

Euonymin, 72.

Eurhodine, Trans., 394.

Eurhodines, a new class of colouring matters, 473; Trans., 391.

Eurhodol, 473; TRANS., 397.

Evaporation and dissociation. IV. study of the thermal properties of acetic acid, TRANS., 790.

Eyster's scheme for qualitative analysis,

Expiration of carbonic anhydride, action of pulmonary tissue in, 1052.

Explosion of homogeneous gaseous mixtures, 761.

Explosions, dust, 404.

- of electrolytic gas and volatile carbon compounds, 762.

theory of, 761.

Explosive mixture, 980.

F.

Fæces, estimation of products of metabolism in, 571.

Fahlerz of Przibram, 514.

Fat, detection of hydrocarbons in, 395.

oils, detection of, in mineral oils, 103.

- formation of, from carbohydrates in carnivorous animals, 482.

– from bicuhyba nuts, 139.

- of the fruit of Vateria indica, 223.

Fats, drying, 1083.

- examination of, 1083.

formation of basic salts in the saponification of, 186.

— melting points of, 495. — natural, 495.

Fatty acids and their aqueous solutions, size of the maximum drops of, 844.

- - and their derivatives, heats of combustion of, 757.

- heat of combustion of, and of their ethereal salts, 192.

 alcohols and acids, diffusion of, 11. - oils, determination of the glycerol

produced by the saponification of, 581. - series, heat of combustion of compounds of, 192.

Favalite, 319.

Feeding stuffs, composition and relative digestibility of, 646.

Felspar, change in colour in, due to the action of light, 27.

- from Weiler, near Weissenberg, analysis of, 212.

Felspars from Krakatoa ashes, 602.

- of Pantelleria, artificial changes in, 602.

 triclinic, crystallographic association of, 992.

Fenugreek seeds, alkaloïds of, 85.

Ferment, acetic, which forms cellulose, TRANS., 432.

- ammoniacal, 386.

diastatic, in saliva, 726.

- inverting, of cane-sugar, 169.

- soluble urea, from Torula urea,

Fermentation, acetous, 732.

— acid, of glucose, 682.

lactic, 733.

— selective, invert-sugar and, 90.

— urinary, 276.

Ferments, action of salicylic acid on, 386.

anærobic, reduction of calcium sulphate by, 573.

- fungoid, activity of, 1060.

in the latex of plants, 1059.

- presence of diastatic and other, in urine, 902.

Flour, old, alkaloïds in, 164.

Ferrates: a lecture experiment, 848. Ferric chloride as a carrier of iodine, - decomposition of, by water, 844. double salts of, with other metallic chlorides, 124. -oxide, determination of, in presence of alumina, 1076. - solutions, reduction of, by means of amalgamated zinc and platinum foil, 836. sulphates, basic, 982. Ferricyanogen, estimation of, by Field's method, 833. Ferrinitroso-β-naphthol, 101. Ferrite, 130. Ferrocyanides, preparation of, 110. Ferrocyanogen, estimation of, by Field's method, 833. Ferronitroso-β-naphthol, 101 Ferrous ammonium sulphate as a reagent for nitric acid, 99. oxide, action of, on vegetation, 486. salts, action of nitrites on, 418. sulphate, antiseptic properties of, and its action on vegetable parasites, Trans., 119. - - experiments with, on rosetrees, Trans., 122. - - method of applying, to the land, TRANS., 122. - retentive properties of, for ammonia and phosphoric acid, TRANS., use of, in agriculture, Trans., 114. Ferulic aldehyde, 251. - methyl ketone, 251. Fibre, new method of distinguishing vegetable from animal, 1088. Fibroïn, 481. Ficus caricà, latex of, 1059. Filter-paper, presence of matter soluble in ether in, 1083. retention of lead salts by, Proc., 206. Filtering apparatus, 592, 917. Filtration, a method of, by means of easily soluble and easily volatile filters, 96. Fisetin, 894. —— hexaceto-, 895. - hexamethyl oxide, 895. - hexethyl oxide, 895. Flavaniline, 631. Flavoline, synthesis and constitution of, Flavopurpuryl phenylcarbamate, 50. Flavoquinoline, 631. Fleeces, merino, composition of, 105.

Flesh peptone, nutritive value of, 902.

Fluid cavities in Brazilian topaz, 674. Fluids, animal, absolute acidity of, 1057. pressure curves of, at their critical condition, 964. Fluorescence of naphthalene-red, 585. Fluoresceïn, β-chloro-, Trans., 530. Fluoresceïns from maleic acid, 51. Fluorides, non-metallic, 850. of heavy metals, compounds of, with sodium, ammonium, and potassium fluorides, 670. Fluorine, atomic weight of, 854. —— detection and estimation of, 97. indirect estimation of, 918. — isolation of, 976. - refraction of, 497. Fluorspar, refractive indices of, 22.1 Fodder plants, composition of, 645. Food, assimilation of, 728. - cattle, sugar as an addition to, 727. Forests, oxygen in the air of, 1066. Formaldehyde, 1006. - and its condensation, 609. --- condensation of, 864. condensation of, with ethyl malonate, 691. derivatives of, 330. Formamidobenzoic acid, 548. Formic acid, hydrated, magnetic rotation of, Trans., 778. - vapour-pressures of, Trans., 765, 774, 776. Formose and its derivatives, 610. Formylanthranilic acid, 358. Formylbenzhydrylamine, 1023. Formyldibenzylamine, 1023. Formyl-m-hydroxyphenyl-p-tolylamine, 456.Formylphenylhydrazide, 1025. Formylphenylhydrazine, 700, 1025. Forsythia suspensa, glucoside from, 1040. Fractionation, chemical, 974. Friction constants, inner, of organic liquids and their aqueous solutions, Fruit-trees, nourishment of, 390. Furfuraldehyde, colour bases from, 612, 1013. Furfurane-derivatives, action of phosphoric sulphide on, 1014. - - of the naphthalene series, 707.

of the phenanthrene series,

Fulminates, constitution of, Trans., 582.

Fulminic acid and its derivatives, 137.

- formation of, 449.

B-Furfuronaphthyline, 612.

Furfurhydrazoïne, 1026.

Fumaric acid, chloro-, action of aniline on, 698.

Fungi, edible, nutritive value of, 1053. Fusel oil, determination of, in spirits, 1079.

- estimation of, 743.

Fustet wood, colouring matter of, 894. Fustetin, 894.

Fustin, 894.

---- tannide, 894.

G.

Gadolinite, 779.

Gadolinium, the Ya of Marignac, 667. Gahnite from Rowe, Massachusetts, 23. β-Galactan, 609.

Galactose, anilide of, 683.

decomposition of, by dilute acids, 138.

preparation of, 328.

Galego officinalis, 829.

Galena, artificial production of, 208.

with octahedral cleavage from Wermland, 21.

Galvanic polarisation, 839.

Garnet, 601.

— from Csiklova, 513.

– in rhyolite, 991.

Garnets in the amphibole schists of the Tyrol, alterations of, 29.

Gas analyses, 107.

--- new apparatus for, 647.

regulator constructed without metal, 15.

- the products of the manufacture of, from petroleum, TRANS., 74.

- volumes, measured, apparatus for the quick reduction of, to normal condition, 96.

Gaseous mixtures, homogeneous, explosion of, 761.

Gases, analysis of, 412.

 combustible, influence of mass on the chlorination of, 845.

- determination of specific gravity of, 412.

furnace, obtaining sulphur from, 288.

 in leaves, variations in the composition of, 273.

 quantity of moisture remaining in, after drying by sulphuric acid, 278. Gastric juice in acute phosphorus poison-

ing, 1053.

— juices of the pig, 271.

- mucous membrane of the pig, histology of, 271.

Gelatin, 635, 818.

- albuminoïds and peptones, capillarimetric distinction between, 1087.

Gelatin, nitrification of, by soil, TRANS.,

plates, oxalate developer for, 106. Geology, application of thermochemistry to, 35.

- zinc, 132.

Gerhardtite, 315.

Germanic acid, 986. – chloride, 986.

iodide, 987. Germanious chloride, 986.

- hydroxide, 986.

-- oxide, 986

---- sulphide, 986.

Germanium, 421, 985, Proc., 161, 197.

---- chloride, 421.

— dioxide, 986. — disulphide, 986.

— oxide, 421.

- spectrum and atomic weight of, 768.

sulphide, 421.

Germination, action of saline solutions on, 90.

Glass, catalytic action of, 591.

Glaucophane from Zermatt, analysis of,

Globulin, 818.

Globulins, new method of separating, from albumins, 164.

Globuloses, 819.

Glucinum fluosilicates, 981.

Glucoferulic aldehyde, 250.

- methyl ketone, 251.

Glucoproteïn, 270.

Glucosamine, 329.

– hydrobromide, 329. - hydrochloride, 329.

Glucose, acid fermentation of, 682.

Glucoses and saccharoses, some, succession of the rate of retrogressive birotation of, with regard to their constitutional formulæ and the extent of affinity, 220.

- anilides of, 526.

conversion into dextrins, 1003.

estimation of water in, 282.

Glucoside allied to coniferin, 250.

- from Japanese Oleaceæ, 1040. Glutamine, presence of, in sugar-beet, 105.

Glutin-fibrin, 1065.

Glutinous rice, 390.

Glyceric acid, pure, preparation of, 327. Glycerol, action of ammonia salts on, 1044.

determination of, 395.

estimation of, in wine, 1080.

—— formation of propylene from, 136. —— oxidation of, 327.

- vapour-pressures of, Trans., 764. Glycogen, estimation of, 494.

Glycogen, in ciliated infusoriæ, 383. in the connective tissue of molluscs, 569. of liver and muscle, influence of strychnine and curare on it, 1054. - presence of, in the protozoa, 87. Glycollamidobenzoic acid, 548. Glycollic acid bisulphide, 325. pyrogenic decomposition of, 224. Glycuronic acid, formation of, during inanition, 572. Glycyphyllin, Trans., 857. Glycyrrhizin in Myrrhis odorata, 172. Glyoxal-diphenylhydrazine, 546. Glyoxylic acid in grapes, 576. — thermochemistry of, 297. Goat's rue (Galega officinalis), 829. Goethite from Pitkäranta in Finland, Gold and platinum, quantitative separation of, from tin, antimony, and arsenic, 651. - beds of Mount Morgan, Queens- chloride, decomposition of, in solution, 975. See also auric chloride. erystallisation of, 988. - demercurising, and the electrolytic extraction of, 109. — from Vöröspatak, 513. --- native, from New South Wales, 774.- notes on, 774. Golden oat grass, analyses of, 909, 912. Gourds, researches on, 95. Grain, germinated, sugars of, Trans., 58, Proc., 142. Grains, dried beer, as horse-fodder, 1066. Granite, weathering of, 995. Granitic rocks of the Ural, 995. Graphite, corundum in, 23. - in pig iron. TRANS., 220. — physical properties of, 774. Gravitation and atomic weight, 591. Gregarinæ, amylaceous granules in, 383. composition of the granules of the entoplasm of, 87. Grasses, permanent, composition, nutritive value, and produce of the, 906. Guanidine, compounds of, with diketones, 556. · thiocyanate, 330. Guejarite from Bolivia, 431. Gum solution, improved, 188. Gutta percha from Bassia parkii, 249. Gypsum castings, process for hardening, 401.

H. Hæmafibrite, 601. Hæmatin and bile pigments, 638. compounds of, 1052. Hæmatolite, 601. Hæmatoporphyrin, 638. Hæmin, action of ammonia on, 165. - iodo-, formation of, as a method for detecting blood stains, 184. Hæmochromogen, 568. Hæmoglobin and methæmoglobin crystals of rodents, 637. conversion of, into methæmoglobin, 637. —— crystals, venous, 482, 374. decomposition products of, 726. --- detection of, in urine, 956. molecule, 165. — preparation of, 165. Halogens, estimation of, in organic compounds, 918. quantitative separation of, 97. Halotrichite from the Falu Mine, 25. Hanksite, 315. Hard fescue grass, analyses of, 909, 912. Hardhead, estimation of tin in, 180. Hauerite, artificial production of, 208. Hay, heated, 275. Heat, development and absorption of, by plants, 483. equivalent of hydroxybenzenes, 655. - of the hydroxyl-groups in the hydroxybenzenes, 656. of dissolution of salts, influence of temperature on, 499. - of chemical combination, influence of temperature on, Trans., 260. of combustion of amines, 409. — of benzene, 409. - --- of fatty acids, 296. - - of organic substances, new method of determining, 115. of formation of crystallised and amorphous selenides, 962. — of double salts, Trans., 287. - of hydrogen selenide, 961. - - of salts and the initial rate of their formation, relations between, - of hydration of salts, Trans., 417. of dissolution of chromates, 962. Heats of combustion of compounds of the fatty series, and of ethereal salts of fatty acids, 192. Heavy spar, treating, 108.

Hemialbumose, 819.

Hemielastin, 270. Hepatin, 1054. Heptolactone, a, 220.

- or propeptone, 567.

Heptolacetone from dextrose, 526. Heptyl salts of normal and fatty acids, boiling points and sp. volumes of, 966. Herderite, composition of, 989. Heteroalbumose, 819. Heteroglobulose, 819. Heteroxanthine, 266. Hexadecane, normal, 998. Hexahydroxymethylenediamine, 327. Hexahydroxymethylene peroxide, 327. Hexamethylbenzene-derivatives, 1016. - tri- and hexa-chloro-, 1016. Hexamethylenamine ethiodide, 863. – methiodide, 863. Hexamethyl-p-leucaniline, 460. Hexamethylmalonamide, 449. Hexamethyltriamidotriphenylamine methochloride, 553. Hexamethyltriamidotriphenyl carbinol, Hexaphenylmelamine, 41, 233. Hexaphenylrosaniline and its salts, Hexyl salts of normal fatty acids, boiling points and sp. volumes of, 966. δ -Hexylene glycol, 218, 219. - oxide, 218, 219. Hexyl glycerol, behaviour of, with hydriodic acid, 681. from allyl dimethyl carbinol, 681. preparation of, 138. Hippuric acid, action of phosphoric chloride on, 702. - action of salicylic aldehyde on, 547. condensation with of. aldehydes, 547. the formation of, 482. Histohæmatins, 568. Holmium, or Soret's X, 667. p-Homobenzenylamidoxime and derivatives, 797. $p ext{-} ext{Homobenzenylazoximebenzenyl, 798.}$ Homoconic acid and anhydride, 562. Homo-o-phthalimide, 812. Homopyrroline, action of acetic anhydride on, 719. Homoquinine, 83. Honey, adulteration of, with sugars, 282. estimation of water in, 282. Hop, bitter principle of, 809. - foliage, feeding value of, 577. Hopeine, 269, 563, 724. Hops, asparagine in, 387. Hornblende containing manganese and zinc from Franklin, 678.

fragments, enlargement of, 318.

128.

- from St. Lawrence Co., New York,

the Hornstone, occurrence of, porphyry districts of Teplitz, 24. Horse, gastric digestion in, 952. Humite, Vesuvian and Ladugrufvan, analyses of, 29. o- and p-Hydrazinebenzenesulphonic acid and their salts, 237. Hyalogens, 481. Hyalophane from Jakobsberg, Sweden, analysis of, 212. Hydrates in solution, TRANS., 275. Hydrastine, reactions of, 633. Hydrastis canadensis, fluorescent principle of, 1041. Hydrazinetoluenedisulphonic acid, 152. Hydrazobenzene, action of benzaldehyde on, 545. - action of ethyl acetoacetate, &c., on, 898, 899. - bromo-, 1024. - p-chloro-, 875. Hydrazocumene, 459. Hydrazoïnes, 1026. Hydrazonaphthalene, 245. Hydrobenzamide, reduction of, 546. Hydrobenzamidetrialdehyde, 547. Hydrobenzamidotricarboxylic acid, 547. Hydrobenzoindicarboxylic acid, 877. Hydrobromapoquinine and its salts, 83. Hydrocarbon, C₁₂H₂₀, non-volatile product of the oxidation of, 141. Hydrocarbons, aromatic, in Caucasian petroleum, 142. compound of aluminium chloride and bromide with, 999. decomposition and genesis of, at high temperatures. I. The products the manufacture of gas from petroleum, Trans., 74. detection of, in oil and fat, 395. -- gaseous, halogenated, analysis of, - of the benzene series, separation of mixtures of, 229. preparation of acids from, 290. - solid, heats of combustion and formation of 756. Hydrochloric acid, action of oxygen on, under the influence of light, TRANS.,

bromine on it, 45.

Hydrocyanic acid, action of, on seeds, 575.

detection of traces of, 1082.

simultaneous oxidation and

Hydrochlorofurfurane - aa' - dicarboxylic

Hydrocinnamamide, and the action of

from, 850.

acid, 690.

- complete removal of arsenic

- Hydrofluoric acid, action on silica and silicates, 979.
- of, 977.
- Hydrogen, action of, on oxygen, Trans., 107.
- and carbon, determination of, by means of copper-oxide asbestos, 580.
- and carbonic acid, action of induction sparks on, TRANS., 104.
- --- carbonic oxide, combustion of, Trans., 94.
- antimonide, liquefaction and solidification of, 977.
- bromide and ammonia, dissociation of compounds of, 500.
- dissociation of the hydrate of, 117, 414, 501.
- temperatures and pressures, 119.
- ----- fluoride, electrolysis of, 849, 976.
 ----- influence of moisture on the oxida-
- tion of, 199.

 nascent, action of, in increasing the
- activity of oxygen, 120.

 occluded by zinc-dust, source of,
- 15. peroxide, bleaching wool with, 292.
- constitution of, 660.
 - constitution of, 660.
 estimation of, 579.
- --- in volumetric analysis, 488.
 --- probable existence of, in natu-
- ral waters, Proc., 225.

 —— phosphide, action of, on solutions of metallic salts, 200.
- of, 977.
- by, 978.
- potassium tartrate, solubility of, 1082.
- ---- preparation of, 184.
- preparation of, by the aid of zincdust, 660.
- selenide, heat of formation of, 961. Hydrojuglone, relations of α to β -, 69.
- Hydronephelite from Litchfield, Maine, 677.
- Hydropyridine-derivatives, synthetical, constitution of, 77.
- Hydropyrocinchonic acid, 1012.
- Hydrothiocinnamic acid, 326.
- β-Hydroxanthranole and its derivatives, 247.
- Hydroxyacetophenone, 61, 239.
- Hydroxyanthraquinones, syntheses of,
- Hydroxyazobenzene, m-dinitro-, 53.
- Hydroxybenzeneazimidonaphthalene, oand p-, 244, 245.

- Hydroxybenzenes, heat equivalent of, 655.

 ——————— of the hydroxyl-groups
- in, 656. o-Hydroxybenzhydrazine, 1026.
- p-Hydroxybenzoic acid, dibromo-, constitution of, 65.
- inversion of cane-sugar by, 932.
- Hydroxybromogramin 252
- a-Hydroxybromocarmin, 252.
- Hydroxychloro-tolucarbostyril, 160. α-Hydroxycinchomeronic acid, 951.
- o- and m-Hydroxycumenylacrylic acid, 466, 467.
- Hydroxycyanuric bisulphide, 325.
- Hydroxycymene, bromo-, 1017.
- Hydroxydihydroquinoxaline, 351.
- Hydroxydihydrotoluquinoxaline, 351. Hydroxydiphthalyl, 882.
- Hydroxydiquinoline, 949.
- Hydroxydurylic acid, 68.
- Hydroxyethylphosphinic acid, 530.
- Hydroxyheptylphosphinic acid, 529.
- Hydroxyhydroethylenequinoline, Trans., 508.
- Hydroxyhydroethylquinoline ethiodide, Trans., 505.
- Hydroxyhydromethy-quinoline benzyl chloride, Trans., 506.
- methiodide, Trans., 501.
- Hydroxyl-compounds, reaction of alum-
- inium chloride with, 143.

 o-Hydroxymethylbenzoic acid, nitro-,
 242.
- Hydroxymethylbenzoyldicarboxylic acid, dibromo-, 253.
- Hydroxymethylphthalic anhydride, 253. Hydroxynaphthaquinone, dibromo-,
- Proc., 232. tetrachloro- and trichloro-, 713,
- 714. β-Hydroxynaphthaquinone, chloro-, 247.
- Hydroxy-α-naphthoic acid, 715.
- Hydroxynicotinic acid, 951.
- Hydroxyphenanthraquinonephosphinic acid, 530.
- Hydroxyphenyl anthranilate, 358.
- Hydroxyphenylphthalamic acid, 1026.
- p-Hydroxyphenylphthalamide, 1026. m-Hydroxyphenyl-o-tolylamine, 942.
- m-Hydroxyphenyl-p-tolylamine and its derivatives, 455.
- p-Hydroxyphenyl-o-tolylamine, 941.
- p-Hydroxyphenyl-p-tolylamine and its derivatives, 457.
- Hydroxyphenyltriphthalamic acid, 1027.
- Hydroxyphesphinic acids, 529. Hydroxyphthalanilide, 1026.
- β-Hydroxyphthalic acid, Trans., 522.
- β-Hydroxyphthalide, TRANS., 525. β Hydroxyphthalimide, TRANS., 524.

Hydroxypipitzahoic acid, Trans., 728. - — dibromide, Trans., 732. p-Hydroxypropylbenzoic acid, o-nitroo-amido-, and acetamido-, 466. Hydroxypropylphosphinic acid, 530. a-Hydroxypropylquinoline, trichloro, 721.Hydroxypyridine, 1044, 1048. a-1'-Hydroxyquinoline and its derivatives, Trans., 500. a-Hydroxyquinolinesulphonic acid, 629. β -Hydroxyquinolinesulphonic acid, 629. Hydroxystearic acid, 140. Hydroxythiodiphenylamine, constitution Hydroxythionaphthen, 788. Hydroxythiotolen, 536. Hydroxythymoquinoneimide, TRANS., 725. Hydroxy-o-toluquinoline, dichloro-, 160. Hydroxytoluquinoxaline, 561. Hydroxytrimethylpyrroline, 529. Hydroxyxylylic acid, 709. Hygrine, 388. Hyperite, porphyritic, from California, Hypersthene from Krakatoa ashes, 602. Hypomercurosic sulphite, Trans., 567. Hypophosphoric acid, 420. - and its ethereal salts, 419. - and some of its salts, 200. — decomposition of, 592, 662. - hydrates of, 303. — thermochemistry of, 408. I. Ice calorimeter, Bunsen's, modification electrification of, by water friction, 960. Idocrase, 601. - from New South Wales, 774. Igelströmite from Delarne, 33. Illicium religiosum, products of the distillation of the leaves and fruits of, 95. Imabenzil, Trans., 473. Imidocarbamine-\(\beta\)-thiolactic acid, 226. Imidochlorides and their reactions, 617. Imines, 139. Inanition, formation of glycuronic acid during, 572. Incandescence by ultra-red rays, 5. Indicator for weak acids, 486. Indicators, new, 278. Indigo, new method for effecting discharges on fibre dyed with, 291. tetrachlor-, preparation of, 112.

Indoaniline, 146.

derivatives, 886. - derivatives, 551. synthesis of, 805. Indolecarboxylic acid, 806. Indophenin, 343. Indophenol, 146. Infusoriæ, ciliated, glycogen in, 383. Inorganic acids, complex, 205. Insects, uric acid in, 1056. Intestine, human, digestion of various foods in, 379. putrefaction in the, 384. Intravascular clotting, 821. Iodic and sulphurous acids, rate of chemical change between, 658. Iodides, inorganic, action of, on organic chlorides and bromides, 434. — organic, action of chlorine and bromine on, 929. Iodine and bromine, separation of, 279. - and iodic acid, testing nitric acid and sodium nitrate for, 834. detection and estimation Trans., 682. — estimation of, 97. — by Field's method, 833. - ferric chloride as a carrier 341. melting and boiling points of, TRANS., 454. - monochloride, TRANS., 461. - solutions, standardising, 579. - vapour-pressures of, Trans., 458. Iodoform, action of light on, 1000. Iron, action of hydrogen chloride on, 425. - and aluminium, separation of, 100. - cast, influence of re-melting on the properties of, Trans., 493. influence of silicon on the properties of, Trans., 130. chemical behaviour of, in the magnetic field, 668. colorimetric estimation of sulphur - compounds as carriers of bromine, 340. determination of, in slags, 489. — of phosphorus in, 1073. estimation of, 393. — in phosphates, 393, 491. — of carbon in, 98. — of silicon in, 835. — of phosphorus in, 488. glance, new occurrence of, 126. pig-, condition of silicon in, Trans., 215. - - graphite in, Trans., 220. presence of, in the liver, 1054. - pyrites, artificial production of, 207.

Indole, preparation of, from o-toluidine-

Iron pyrites concretions from New South Wales, 774. separation of, from zinc, 650. – – titanium from, 492. See also ferrous and ferric. Ironstone concretions from New South Wales, 774. Irrigation, changes occurring during, and the action of water in, 176. Isatin, condensation-products of, 154. - nitrobromo-, 360. Isatoic acid, 358. bromo- and chloro-derivatives of. 359. Isatylenetoluquinoxaline, 562. Isoamyl alcohol, vapour-pressures of, TRANS., 764, 771, 773. phenyl ketone, Trans., 166. Isoamylphenylamine, 264. Isoamylphosphinic acid, 529. Isobenzalphthalimidine, 266. nitro- and amido-, 630, 631. Isobenzidine, 471. Isobenzil, 888. Isobilianic acid, 818. Isobutyl alcohol, vapour-pressures of, Trans., 763, 771, 773. - phenyl ketone, Trans., 165. Isobutylbenzenesulphonic acid, 878. m-Isobutylbenzoic acid and its derivatives, 878. p-Isobutylbenzoic acid and its derivatives, 878. Isobutyldiphenylglyoxaline, TRANS., 467.Isobutylene, action of hydriodic acid on, 680. Isobutylisopropylquinoline, 263. Isobutyllutidine, 260. Isobutyllutidinedicarboxylic acid, 260. Isobutyranilide, and p-brom-, 52. Isobutyric acid, vapour-pressures of, TRANS., 766, 774, 776. Isobutyrone acetoxime, 783. Isobutyrothiënone and its derivatives, 538. Isocholanic acid, 817. Isocinchomeronic acid, 477. - synthesis of, 719. Isocumidine, 58. Isocyanilic acid, 137. Isocyanuric acid, 137. o-Isocyanuric acid, diphenylated, 234. m-Isocymophenol, 696. Isodimorphism of arsenious and antimonious compounds, 503. Isodiphenylacetonitrile, 1034. £-Isofulminuric acid, 137. Isoglucosamine and its salts, 933. Isohesperidin, 577. Isomelamines, alkyl, derived from the

alkyl cyanamides, 41.

Isomerism in the benzene series: phenols of complex function, thermochemistry of, 7. Isonitroso-derivatives, 618. Isophthalophenone dioxime, 877. Isoprene, refraction and dispersion equivalents of, TRANS., 619. Isopropyl alcohol and benzil, compound from, TRANS., 832. - hydrogen oxalate, 786. - phenylcarbamate, 342. Isopropylmethoxystilbene, 468. o-Isopropylphenol and its derivatives, Isopropylphenylcinnamic acid, 467. Isopropylphenylglycollic acid, 739, 790. Isopropylquinoline, 264. ---- and its derivatives, 465. — a-chloro-, 465. Isopropylquinolinecarboxylic acid, 263. Isopropylthiophen, 534. Isoquinoline and its salts, 78. ---- chloro- and dichloro-, 812. —— derivatives, 265. — oxidation of, 478. — synthesis of, 812. Isoquinolines, mono- and di-hydroxychloro-, 702. Isorcinol, identity of, with cresorcinol, Isosaccharic acid and its derivatives, 689. - constitution of, 48. - tetracetyl, 690. Isosaccharyl phenylcarbamate, 50. Isosuccinates, solubilities of, 935. Isoterpene, constitution of, 336. Isothionine, 53. Isouvitic acid, 880. Isovaleric acid, vapour-pressures of, Trans., 767, 774, 776. Itaconic acid, constitution of, 335, 688.

J.

Ivory, bleaching and dyeing, 188.

Ivy, essential oil of, 274.

Jaborandi leaves, bases in, 85.
Jaboric acid, 816.
Jaboridine, 85.
Jaborine, 815.
Jamesonite, artificial production of, 209.
Jarosite from Utah, 517.
Jecorin, 636.
Jervic acid, 868.
Juglone, 363.
Juglonedioxime, 364.

K.

Kærsutite from Greenland, 519.

Kaolin, action of, on halo d salts of the alkalis, 664.

Kaolinite, a variety of, from Nelson Co., Virginia, 128.

Kataplëite, chemical composition of, 34. Keratin in animal tissues, diagnosis of, 106.

— wool, formula of, Proc., 142, 147.

Ketones, action of heat on, 865.

—— aromatic, 461.

—— double, ammonia as a reagent for, 331.

— formation of, from the compounds resulting from the union of anhydrides and salts, TRANS., 317.

— of the thiophen group, 539. Kjeldahl's method of estimating nitro-

gen, 179.

Knebelite from Sweden, 928.

Konichalcite from Utah, 516.

Koppite, analysis of, Trans., 153. Kornerupine from Greenland, 519.

Koumiss, 782.

Krakatoa ashes, minerals from, 602.

Krennerite, 312.

Krokydolite, 128, 603.

Kupflerite from Greenland, 519.

L.

Laboratories, improved method of ventilating, 15.

Labradorite, alteration of, into an albite and a zeolitic mineral, 128.

from Lower Silesia, analysis of, 212.
from the enstatite-porphyrite of

the Cheviot Hills, analysis of, 211.

from the Krakatoa ashes, analysis of, 211.

Labradorites from the basalt of Iceland, 602.

Lactamidobenzoic acid, 548.

Lactates, 1009.

Lactic acid from levulose, 141.

--- pyrogenic decomposition of,

Lactone ring, resolution of, by alcohol and hydro-acids, 531.

Lactucerin, 1020.

Lactucerol, a and β -, 1021.

Land, grass, increase of nitrogen in, 276.

Latex, proteïd substance in, 828.

Lauric acid, descent of the series from myristic acid to, 685.

Lavenite, 34.

Lead and silver thiobismuthite, 515.

and tin, specific heat of alloys of, 961.

Lead chloride, action of carbonic oxide on, 17.

—— dioxide, examination of, 742.

--- dithionate, optical phenomena of, 958.

---- glycollate chloride, 335.

nitrate, action of phosphorus oxychloride on, Trans., 224.

—— silicate, artificial, crystallised, 317. —— tetrachloride, 123.

Leather, detection of grape-sugar in,

Leaves, absorption of carbonic anhydride by, 1062.

formation and migration of carbohydrates in, 826.

of Esculus hippocastanum and

Acer dasycarpum, 1065.
——respiration of, in the dark, 170, 273.

----- solution of starch in, 827.

supplied with sugars, mannitol, and glycerol, formation of starch in, 902.
 variations in the composition of

gases in, 273.
— white and green of Quercus rubra,

analysis of, Trans., 839. Lecithin in plants, 1064.

Lecture experiment: chromammonium compounds, 849.

electrolysis of ammonia, 848.

sition of nitrous and nitric oxides, 660.

Lepidine, 162.

Lepidinecarboxylic acid, 630.

Lepidomelane from Litchfield, Maine, 678.

Leucatropic acid, 256.

Leuco-isothionine, 53. Leucomaïnes and ptomaïnes, 634.

Leucomalachite-green aldehyde, 461.

Leucomethylene-azure, 55.

Leuconic acid, 450, 540.

Leucoditolylenequinoxaline, 540.

Leucothionine, 53.

Leucothionol, 56.

Leucothionoline, 56.
Levulinic acid, formation of, in reference to the detection of carbohydrates, 532.

Levulose, 438.

- action of bromine and water on, 328.

---- anilide of, 683.

--- cyanhydrin, 219, 438.

— formation of, from mannitol, TRANS., 184.

Levulose, formation of lactic acid from, 141.

--- oxidation of, 328, 863.

Levulose-carboxylic acid, lactone of, 869. Lichenin sugar, 869.

Liebig's extract of meat, physiological action of, 89.

Liëvrite from Kangerdluarsuk, Greenland, 676.

Light, velocity of, in carbon bisulphide, 957.

--- in quartz, 653.

Lime-leaves, essential oil of, TRANS., 316.

Lime waste from sugar factories as manure, 647.

Limonite, pseudomorphs of, after iron pyrites, 992.

Linoleic acid, 868.

Lipaciduria, 1056.

Liparites, so-called, from the Sieben-gebirge, 603.

Lipic acid, 611

Liquids and solids, molecular weights of (evidence deducible from the study of salts), 198.

--- dielectric, behaviour of, under strong electric charges, 959.

--- dissociation of, 499.

--- nature of, Proc., 226.

- organic, inner friction, constants and specific viscosity of, 657.

—— quantitative evaporation of, in the spheroidal state, 647.

Lithium, estimation of, by spectrum analysis, 178.

salts, physiological action of, 88,

- sulphate, anhydrous, heat of dissotion of, TRANS., 309.

——— monohydrated, heat of dissolution of, TRANS., 310.

Lithomarge from New South Wales, 774. Liver, a new ingredient of the, 636.

—— conversion of peptone by the, 382. —— presence of iron in the, 1054.

Löllingite from St. Andreasberg, 513.

Lokanic acid, 255.

Lokao or Chinese green, 254.

Lokaonic acid, 255.

Lokaose, 255.

Long-wool, composition of, 105.

Lupanine, an alkaloïd from the seed of the blue lupine, 163.

Lupines, beans, and maize, analyses of varieties of, grown under like conditions, 95.

Lupinus augustifolius, an alkaloïd from the seed of (lupanine), 163.

— luteus, carbohydrate from the seed of, 608.

—— new base from, 725.

Lupulic acid, 809.

Lupuline, commercial, volatile fatty acids present in, 1007.

Lutidine, 258.

Lutidinecarboxylic acid, 720.

Lutidinedicarboxylic acid, 259.

Lutidinetricarboxylic acid, 258.

M.

Magdala-red, composition of, 712. Magenta, manufacture of, 290.

Magnesia containing rare earths, 980.

effects of the presence of, in Portland cement, 770.

— estimation of, 490.

Magnesium acetate, 530.

 carbonate, normal, and its combination with potassium hydrogen carbonate, 121.

—— chloride, decomposition of, in solution, 975.

--- peroxide, 305.

----- sulphate, anhydrous, heat of dissolution of, Trans., 291.

heptahydrated, heat of dissolution of, Trans., 292.

Magnetic field, chemical behaviour of iron in, 668.

--- rotation of water with some of the acids of the fatty series, with alcohol and with sulphuric acid, Trans., 777.

Magnetism of magnetite, 654. Magnetite from Scalotta, 928.

— magnetism of, 654.

Mahwa flowers, 389. Maize, composition of, 274.

— lupines, and beans, analyses of varieties of, grown under like conditions, 95.

Malachite-green, p-acetamido-, 553.

Malamidobenzoic acids, 621.

Maleic acid, bromo-, action of aniline on, 698.

Malic acid, 869.

decomposition of, 48.

optical properties of, 1. acids, 48.

Malonamidobenzoic acid, 549.

Malonates, solubilities of, 935.

Malonic acid, action of cinnamic and salicylic aldehydes on, Trans., 365.

- a peculiar reaction of, 935.

— acids, substituted, action of nitric acid on, 533.

Malonodibenzanic acid, 549.

Malonodinitrile, 786, 860.

Malontoluidic acids, isomeric, and their salts, 147.

Maltodextrin, 221, 438.

Malyldibenzamic acid, 622.

Manchester yellow, toxic action of, 273.

Manganese arsenates, 771.
—— chemistry of, 854.

- determination of, 490.

electrolytic estimation of, 921.

----- estimation of, 101, 393.

minerals from Wermland, 34.

---- silicates, 320.

--- volumetric estimation of, by means of potassium chlorate, 101.

Manganese-apatite from Saxony, 432. Manganese-blende, artificial production

of, 208.

Manganese-hisingerite, analysis of, 34. Manganite from Oberstein, 675.

Manganites of the alkaline earths, 425.

Manganocalcite, 33, 320.

Manganostibite, a new mineral from Wermland, 25.

 β -Mannide, 682.

Mannitol, action of Bacterium aceti on, Trans., 182.

---- dichlorhydrin, 681.

formation of levulose from, Trans., 184.

---- oxidation of, 608, 782.

- presence of, in the cambium sap of pines, 1062.

products of the oxidation of, with potassium permanganate, 525.

Manure, Chili saltpetre or ammonium sulphate as, 646.

--- failure of ammonium sulphate as, 646.

farm-yard, preservation of, 277.
——lime waste from sugar factories as,

647.
— nitre and ammonium sulphate compared, 954.

Manures, action of solutions of, on the

germination of the seeds sown, 90.

manner of applying artificial
647.

unexhausted, valuation of, 177.

--- various, effect of, on the ash of tobacco, 177.

Manurial experiments with precipitated phosphates and Thomas slag, 1069.

---- value of braken, 485.

Manuring oats with Thomas slag, 391.

Marcasite, artificial production of, 208.

Mash, sweet, estimation of undissolved

starch in, 746.

Mass, influence of, on the chlorination of combustible gases, 845

Mattes, estimation of arsenic in, 100.

Meadow fescue grass, analyses of, 909-912.

— foxtail, analyses of, 909-912.

grass, rough stalked, analyses of, 909-912.

Meat-peptones, nutritive value of, 378. Meconic acid, heat of solution and of

neutralisation of, 8. Meerschaum, 316.

Melam compounds, 524.

Melamine, constitution of, 41, 217.

Melamines, 38.

— normal, 522.

Melanotallo from Vesuvius, 600.

Melanurenic acid, 217, 435.

Melem, 324.

——and its decomposition by alkalis, 524.

Melezitose and its acetyl and phenylhydrazine derivatives, 683.

Melilotus leucantha, 828.

Melitose from eucalyptus manna, 527.

— from molasses, cotton-seeds, and eucalyptus manna, 138.

Mellitic acid, heat of solution and of neutralisation of, 8.

Mellogen, incomplete oxidation of, 469. Mellone, action of alkalis on, 524.

Melting points, apparatus for determining, 1070.

—— —— calculation of, 411.

determination of, 417.

Menilite, 775.

Menthol-derivatives, 892.

Menthyl benzoate, 893.

—— carbonate, 893. Menthylurethane, 892.

Mercuric chloride, determination of, in toxicological cases, 743.

- sp. gr. of aqueous and alcoholic solutions of, 412.

— hydrogen sulphite, TRANS., 554.

iodide, action of nitric acid on, 204.
 solubility of, in fatty compounds and other solvents, 110.

- oxysulphite, TRANS., 546.

---- sodium sulphite, TRANS., 538.

—— sulphide, action of nitric acid on, 595.

— sulphite, "normal," Trans., 535. Mercurosic sulphite, Trans., 535, 559.

Mercurous anhydrosulphite, Trans., 566.

--- iodide, alteration of, by exposure to light, 17.

—— sulphate, 852.

Mercury, detection of, 921.

determination of, in toxicological cases, 743.

electrolytic estimation of, 493, 650, 923.

----- fulminate, preparation of, 606, 680.

932.

Mercury propylphenyl, 945. Methane, nitro-, action of, on chlor----- sulphate, basic, 982. hydrins, 862. - sulphites and the constitution of Methanedisulphonic acid, chloro-, 787. sulphites, Trans., 533. m-Methoxybenzaldehydes, α - and β ---- constitution of, TRANS., 574. nitro-, and p-nitro-, 60. reduction of, with sulphurous p-Methoxybenzene, o-nitramido-, 1046. acid, TRANS., 575. p-Methoxycoumarilic acid, 881. - vapour, absorption of, by platinump-Methoxycoumarone, 881. black, &c., 766. p-Methoxyhydrocoumarilic acid, 881. vapour-pressures of, Trans., 37. Methoxyhydromethylquinoline, TRANS., --- vapour-tension of, at ordinary temperatures, 963. - methiodide, Trans., 503. Merino fleeces, composition of, 105. Methoxyhydromethylquinolium hydr-Mesaconic acid, constitution of, 335. oxide, Trans., 504. Mesityl alcohol, bromo-, 451. Methoxyl, estimation of, 493, 1079. - bromide, bromo-, 451. Methoxymethyl ethyl acetone, Trans., Mesitylene, bromination of, 451. Mesitylphthalide, 1029. - butyl ketone, Trans., 55. Metabolism, estimation of nitrogen in Methoxymethylphthalic acid, dibromo-, products of, 1053. estimation of products of, in fæces, Methronic acid, 225. Methyl alcohol, action of Bacterium Metacinnabarite, 314. aceti on, TRANS., 177. Metallic films, thin, discrimination of, - --- action of barium monoxide on, 861. 1076. --- salts, action of hydrogen phosphide - - combination of, with barium oxide, 782. on solutions of, 200. - action of sodium thiosulphate - --- compound of, with copper on, 17. sulphate, 524. — — from plants, 274. Metallurgy, improvements in, 109. Metals, action of acids on, Proc., 189. - vapour-pressures of, Trans., - determination of the atomicity of, 762, 768, 771, 773. by means of cryoscopy, 197. — amidoterephthalate, 802. - separation of, by means of oxalic benzyl - p - nitrobenzoylacetate, acid, 922. TRANS., 446. Meteoric iron from Baterville, Inde-- chlorimidocarbonate, 611. - β-chlorophthalate, Trans., 529. pendence Co., Arkansas, 995. - - from Glorieta Mountain, diacetotartrate, crystalline form of, New Mexico, 321. - from Laurens Co., South — dipropyl carbinol, 437. Carolina, 996. - ethyl dibromoquinol, 454. — dinitroquinol, 454. — tetrachloroquinol, 454. - from Santa Rosa, Colombia, 1810, 133. - from Trinity Co., California, — hydrogen oxalate, 786. — β-hydroxyphthalate, TRANS., 524. - from West Virginia, 520. ---- hypochlorite, 608. Meteorite, Bingera, 133. — imidocarbonate, 612. —— Deniliquin or Barratta, 134. ---- isoamyl quinol, 454. - Fomatlán, Jalisco, Mexico, 321. — isocyanurate, chlorinated, 931. ---- Grand Rapids, 321. --- isopropenyl carbinol, 137. - Green Co., Tennessee, 433. - ketones, aromatic, and their oxida----- Tysnes, 927. tion, 462. Meteorites in the public collections of -mercaptan, perchloro-, reaction of, Mexico, 133. with aromatic amines, 458. Methæmoglobin, conversion of hæmo-— p-methylanthranilate, 361. globin into, 637. nicotinate methiodide, 369. p-nitrobenzoylacetate, - crystals of rodents, 637. Methane, chlorobromo, and bromiodo, 444. - nitroterephthalate, 802. dinitrochloro-, reduction of, 323.
 formation of, from cellulose, 577, - nonyl ketone from Citrus limetta,

TRANS., 317.

- oxymenthylate, 892.

Methyl phloroglucinoltricarboxylate, - salts of normal fatty acids, boiling points and specific volumes of, 966. - seleniocyanate, 781. — seleniocyanurate, 781. tetrachlorophthalate, crystalline form of, 620. - thiocyanurate, action of ammonia and amines on, 38. - violet, 460. - base of, 362. Methylaceto-m-chloranilide, 940. Methylacetothiënone and its derivatives, 871. - and its nitro- and hydroxylaminederivatives, 228. Methylamarine, 237. Methyl-o-amidobenzene, nitroso-, 63. Methylamidomethoxycyanuric chloride, Methylamine chlororhodate, 311. hydroferrocyanide, crystalline form Methylaniline, dinitro-, action of potassium cyanide on, 235. Methylanilines, nitration of, 1022 v-Methylanthranilamidoanilide, 361. v-Methylanthranilanilide, 361. p-Methylanthranilimide, 361. Methylanthraquinone, 557. Methylatropic acid, 468. Methylazobenzene, tetranitro-, 1022. m-Methylbenzhydrazoïne, 1026. m-Methyl-o-benzylbenzoic acid, 1028. Methylbutylacetic acid, 438. α-Methyl-β-chlorocinnamic acid, TRANS., 158Methylchlorocrotonic acid, 1010. α-Methyl-α-chloro-β-hydroxybutyric acid, 1008. α-Methyl - β - chloro - α - hydroxybutyric acid, 1008. Methylchrysoïdine. 544. a - Methylcinnamaldehyde, m - amido-, 701. and its m-nitro-derivative, 560. — m-nitro-, base from, 701. - m-nitro-, product of the reduction of, 799. p-Methylcoumaric acid, 467. Methylcoumarilamide, 1014. B-Methylcoumarilic acid, 707. B-Methylcoumarone, 707. Methylcyanidine, amidodiperchloro-, 323. amidomethamidoperchloro-, 324. — diamidodiperchloro-, 324. Methyldiazoamidobenzene, Trans., 748. Methyldiiodamine, 44. Methyldiphenylglyoxaline, Trans., 465.

Methyldiphenylpyrroline, 75.

Methyldiphenylpyrrolinecarboxylic acid and its ethyl salt, 75. Methylene-azure, 55. - -blue, 1026. composition of, 53. - group, 53. - chloride, action of water and ammonia on, 861. - derivatives, 43. - red, 54. - -violet, 54. Methylethylcarbin-carbinol, 784. Methylethylindole, 805. Methylethylpyridine, 257. Methylhydroxyglutaric acid and the corresponding latonic acid, 533. Methylhydroxyxanthine, 338. Methylindole-acetic acid, 806. p-Methylisatin, mono- and di-phenylhydrazine, 362. p-Methylisatoic acid and its derivatives, Methylketodehydroheptamethylene, Methylketodehydroheptamethylenedicarboxylic acid, 937. Methyl-p-methoxyphenyl-p-tolylamine, Methyl-α-naphthafurfurane, 717. Methyl-α-naphthafurfuranecarboxylic acid, 717. Methyl-β-naphtha-a-furfuranecarboxylic acid, 717. Methyl-m-nitraniline, 544. Methyl-o-nitrobenzene, nitroso-, and its methyl- and ethyl-derivatives, 63. Methyl-o-nitro-p-diazobenzene chloride, nitroso-, 63. Methyloctylthiophen and its bromoderivative, 536. Methylphenazine and its salts, 546. Methylphenylallenylamidoxime, 799. Methylphenylallylpyrroline, 75. Methylphenylallylpyrrolinecarboxylic acid and its ethyl salt, 75. Methylphenylaminefumaride, 792. Methylphenylaminesuccinide, 792. Methyl m-phenylenediamine, 544. Methylphenylfumaramic acid, 792. Methylphenylfumaride, 621. a-Methyl-β-phenylhydroxypropionic acid, Trans., 159. Methylphenyl-a- and β-naphthylpyrrolinecarboxylic acid, 76. Methylphenylpyrrolinecarboxylic acid,

75.

Methylphenyl-o-tolylpyrroline, 76.

acid and its ethyl salt, 75. Methylphenyl-p-tolylpyrroline, 76.

acid and its ethyl salt, 76.

Methylphenyl-o-tolylpyrrolinecarboxylic

Methylphenyl-p-tolylpyrrolinecarboxylic

1166 o-Methyl-p-propylphenyl methyl ketone, Methylpropylpinacoline, 784. Methylpseudo-o-tolisatin, 552. Methylpyrroline, acetyl-, 719. action of acetic anhydride on, 719. - diazobenzene, 1041. Methylpyrrolines, action of phthalic anhydride on, 1044. Methylpyrryl methyl ketone, 719. Methylpyrrylalloxan, 897. Methylquinoline, chloro-, and some of its salts, 79. Methylsulphonic chloride, trichloro-, preparation of, 1000. Methyltetrahydro-p-phenylquinoline, derivatives of, 81. Methylthalline and its salts, 80. Methylthialdine, 1005. Methylthiolydantoin, and isonitro-, 227. Methylthiophensulphonic acid and its salts, 787. Methyl-p-tolindole, 552. Methyl-p-tolindolecarboxylic acid, 552. Methyl-o-tolindolecarboxylic acid, 552. Methyltoluquinoxaline, 561. Methyluracil, amido-, 338. - bromo-, 338. Miargyrite, artificial production of, 209. Mica, from Branchville, 129. from the Rheinwaldhorn, Graubünden, 991. from Weiler, near Weissenberg, analysis of, 212. Mica-diorite of Christianberg, Bohemia, minerals from, 32. Microchemical reactions, 487. Microline from Forst, Tyrol, 518. Micro-organisms, biological and chemical properties of, 731. - reduction of nitrates by, 823. removal of, from water, 573. Microscopic analysis of minerals, 917. Mildew, employment of sulphate of copper with lime as a preventative of, 737.Milk analysis, use of acetic acid in,

cow's, adulteration of, with goat's

- of shorthorn and other cows and

- sugar, existence of the elements of,

Millerite, occurrence of, in St. Louis,

- determination of fat in, 283.

—— milk-sugar in, 582. —— new method for the analysis of,

of goats, composition of, 168.

estimation of the several

milk, 924.

albuminoïds in, 272.

in plants, 575, 643.

125.

Mineral oils, detection of fat oils in, 103. - testing for, in fat oils, oleins, and fuller's fats, 581. waters, determination of arsenic and boric acids in, 649. Mineralogical notes from Bohemia, 31. Minerals, absolute hardness of, 20. - from Oberwiesenthal, 601. from Switzerland, 126. from the eruptive rocks of the cretaceous formations of Silesia and Moravia, 928. - from the mica-diorite of Christianberg, Bohemia, 32. - manganese, from Wermland, 34. microscopic analysis of, 917. – new to Britain, 432. – Norwegian, two new, 34. of the colitic iron ore of the Windgällen, 780. - of the pegmatite vein at Moss, 27. — of Vester-Silfberg, 33. — some ill-determined, 130. Mixed derivatives, volatility of, 135. Molasses, obtaining sugar from, 403. Molecular conductivity, 294. equivalents, physical, 197. — movements, 14. - weights, cryoscopy as a means of determining, 197.

of liquids and solids (evidence deducible from the study of salts), 198. - of organic substances, determination of, by the lowering of the freezing point of their solutions, 970. Molecules, combinations of, with atoms, 661. Molluscs, glycogen in the connective tissues of, 569. uric acid in, 1056. Molybdenum derivatives, reactions of, electrolytic estimation of, 18. — residues, treatment of, 124.
— solutions, electrolysis of, 102. Monochromatic light, simple burner for, Monophenylseleniocarbamide, 781. Monosodium arsenate, 769. - phosphate, 769. Moorlands, high-lying, manuring of, 578. Morphine, behaviour of, with potassium chromate, 1047. derivatives of, 563.

lactate, 813.

1086.

method of determining, in opium,

Mimetesite, containing lime, from Puyde-Dôme, analysis of, 210.

Morphine, reactions of, 899. Mosandrium, 507. Moulds, abnormal secretion of nitrogenous substances by, 733. Mucin obtained from tendons of the ox, 166. Muscovite from Forst, Tyrol, 518. Mustard oil, examination of, 394. white, composition of, during growth, 913. Mucoderma aceti, best cultivation liquid for, 732. occurrence of cellulose in, 732. Myeloïd, 375. Myohæmatins, 568. Myristic acid, descent of the series from, to lauric acid, 685. — oxidation of, 867. Myristotridecyl carbamide, 685. Myrrhis odorata, glycyrrhizin in, 172. Mytilotoxime, 634. Mytilus edulis, poison of, 568. N. Nagyágite, 312. Naphtha, wood, 289. u-Naphthachloroquinol, dichloro-, 714. B-Naphthacridine, 1037. Naphthalene, azo-compounds of, 714. – β-bromo-, 807. - β -chloro-, action of sulphuric acid on, 555. - compounds, α-monohaloïd, action of aluminium chloride on, 806. — derivatives, 807. constitution of, Proc., 172. --- conversion of, into substituted phthalides, 807. - γ-dibromo-, TRANS., 189. – di- and tri-bromo-, Рвос., 173. - dichloro-, [2:3], 246. ---- ε-dichloro-, constitution of, 247. — dinitroso-, 472. — o-dioxime α-ethyl ether, 474. — a-iodo-, 362. —– β-nitro-, 471. – α -oxime- β -imide, 474. β -pentachloro- and β -heptachloro-, 713. - purification of, by means of soap solutions, 713. -red, fluorescence of, 585. — tetrachloro-, 716. — trichloro-, 156. Naphthalene-?-β-disulphonic acid,

Proc., 231.

23Î.

γ-Naphthalenedisulphonic acid, Proc.,

Naphthalene-a- and - β -sulphonic acid, action of chlorosulphonic acid on, Proc., 230. Naphthalenesulphonic acids, action of bromine on, Proc., 233. -- a-nitro-, a-bromo-, a-chloro-, Proc., 233. Naphthalenesulphonic acid, y-amido-, 1037. - γ-nitro-, 1037. Naphthalenetetracarboxylic acid, 949. Naphthalide, o- and p-nitro-a-aceto-, o- and p-nitro-α-diaceto-, 624. α-Naphthalidinesulphonic acid, 554. Naphthamide, nitro-, 948. Naphthanthracene, 1037. Naphthanthraquinone, 1037. a-Naphthaquinol, dichloro-, 714. Naphthaquinone, β-dichloro-, 247. - p-dichloro-, 807. - α - and β -methyl ethers, 362. — tetrabromo-, 807. Naphthaguinoneamide, chloro-, 808. Naphthaquinoneanilide, β-chloro-, 247. - tetrachloro-, 714. Naphthaquinonetoluide, o- and p-, β chloro-, 247. α-Naphthaquinones, chlorinated, 714. Naphthidine and its derivatives, 245. $oldsymbol{eta}$ -Naphthilbenzoïn, 888. Naphthionic acid, constitution of, 889. Naphthoic acid, bromo- and nitro-, 715. - —— chloro-, and nitrochloro-, 156. - ---- dinitro-, 948. - ---- nitramido-, 948. acids, 948. ---- nitro-, 155. trinitro-, 948. Naphthol as a reagent for free chlorine and bromine, 97. - and sulphuric acid as a reagent for nitric and nitrous acids and free chlorine, 99. chloro-, 2 : 3, 246.dichloro-, 156. -Naphthol-blue, 147. α - and β -Naphthol, behaviour of, in the system, 822. β -Naphthol, crystalline form of, 543. - ethyl ether, a-nitroso-, 474. Naphtholazobenzenes, 246.

α-Naphthol-β-sulphonic acid and its salts, 156.
 Naphtholestone and its brome devices

 β -Naphtholsulphonic acid, action of

Naphthol-di- and tri-sulphonic acids,

a-Naphtholmaleïnfluoresceïn, 51.

bromine on, Proc., 232.

716.

Naphtholaetone and its bromo-derivative, 716.

Naphtholsulphonic acid, [2:3], 246.

Naphthostyril, 715. ---- aceto- and dibromaceto-, 715.
---- dichloro- and dibromo-, 715. α- and β-Naphthyl carbonate, 789. a-Naphthyl phenyl ketone, 625. - and its derivatives, 947. β -Naphthyl phenyl ketone, 625. α-Naphthylamido-cyanuric chloride, TRANS., 314. β-Naphthylamidocyanurie chloride, TRANS., 740. Naphthylamine, dibromo-, Proc., 173. --- dinitro-, 947. α-Naphthylamine, o-nitro, 624. picrate, 454. β -Naphthylamine \mathbf{and} diazophenols, compounds from, 235. and diazo-salts, constitution of the compounds obtained from, 244. a-Naphthylaminephthalein, 68. B-Naphthylaminesulphonic acid, 890. a-Naphthylaminesulphonic acids isomeric, 364, 554. Naphthylene-diallylthiocarbamide, 625. α -Naphthylenediamine, diaceto-, 472. nitrodiaceto-, 472. Naphthylene-ethenyldiamine and salts, 624. Naphthylenetoluguinoxaline, amido-, TRANS., 400. Naphthylglycuronic acids, α - and β -, Naphthylhydrazine, α - and β -, 554, 555. α-Naphthylhydrazinepyroracemic acid, B-Naphthylmelamine, Trans., 740. a-Naphthylphthalamic acid, 473. a-Naphthylphthalimide, 472. Nectar, 575. Neossine, 635. Nepaulite, so-called, 207. Nephelinic tephrite of the Jamma Valley, Nephrite, new locality for, in Asia, 210.Nerve-substance, chemical composition of, 385. Neutrality, absolute, determination of, 765. Nickel and cobalt, separation of, 492. - arsenates, two new, 508. ---- atomic weight of, 596. --- carbide, 854. - copper, cadmium, zinc, &c., separation and estimation of, 580, 650. estimation of, on nickeled iron, 836. - examination of, 1077. - ores from New Caledonia, 320. - from Hungary, 313.

— separation from cobalt, 1077. - sulphate, basic, 982.

Nicotine, reduction of, 161. Nicotinic acid, methylbeta in of, 369. Niobium, determination of, 393. Nitrates and nitrites, diphenylamine and crystallised phenol as reagents for, detection of, 392. - determination of nitrogen in, by Kjeldahl's method, 834. - migration of, in plant tissues, 484. - reduction of, by micro-organisms, 823. and nitrites. formation and destruction of, in artificial solutions and in river and well waters, Trans., 632. Nitre compared with ammonium sulphate as a manure, 954. Nitric acid, action of phosphorus oxychloride on, Trans., 224. - — detection of, by means of pyrogallol, 179. in presence of nitrous acid, 740. determination of minute traces of, 648. - --- ferrous ammonium sulphate as a reagent for, 99. - ---- testing for iodine and iodic acid in, 834. and nitrous acids, naphthol and sulphuric acid as a reagent for, 99. - oxide, lecture experiment showing the volume composition of, 660. - — preparation of, 200. solubility of, in bromine, 501. - peroxide, action of chlorine on, TRANS., 226. dissociation of, 657. Nitrification and denitrification, alternate, Trans., 669. influence of organic matter on, Trans., 667. is organic carbon essential to? TRANS., 651. of ammonium salts, Trans., 643, 654. of ammonium and potassium thiocyanates by soil, TRANS., 637. - of ethylamine by soil, Trans., 633. - of gelatin by soil, TRANS., 641. of urea, Trans., 639. - of urine, TRANS., 642. Nitrifying organism, period of incubation of, Trans., 679. Nitroethane, 999. Nitrogen, absorption of, by cultivated soils, 275. - atomic volume of, 661. band-spectrum of, 189. - compounds in rain-water, 737. determination by Kjeldahl's

method, 648.

Nitrogen, determination of, in coal and coke, 1071.

- of, in wine must and lees, 652.

estimation by combustion, 488.

— of, in plants, 955.

- of, in products of metabolism, 1053.

- of, in the milk and urine of herbivora, 1072. - free, organic carbon in soils which

absorb, 736. - increase of, in grass land, 276.

- influence of bodily labour on the discharge of, 569.

- in nitrates, determination of, by Kjeldahl's method, 834.

iodide, 16.

- Kjeldahl's method of estimating, 179, 282.

organic iodides of, 44.
spectrum of, at the negative pole, 957.

- supposed allotropic modification of, Proc., 223.

Nitrometer, new applications of, 278.

---- new uses of, 391.

- reduction of ferric nitrate in, 1072. --- supposed error in the use of the, 391. Nitrous acid, action of, on urea, uric

acid, and ammonium sulphate, 747. — ethereal salts of, 217.

oxide, density of, 758.

- - lecture experiment showing the volume composition of, 660.

Nitroxyl chloride, non existence of, Trans., 222.

Nitryl chloride, non-existence of, TRANS., 222.

Non-alimentary substances, absorption of, by plants, 171.

Nonyl alcohol, normal, primary, 998. - iodide, 998.

Normal solutions and the retention of Mohr's system, 1070.

Norwegian minerals, two new, 34.

Nucleo-proteïds, 1051.

Nutrition of herbivora, does cellulose economise the decomposition of proteïds in, 728.

0.

Oak, scarlet, analysis of white and green leaves of, TRANS., 839.

Oats, manuring, with Thomas slag, 391. Obituary notices, Trans., 342. Octyl carbamate, 692.

salts of normal fatty acids, boiling points and sp. volumes of, 966.

VOL. L.

Octylacetothiënone, 535.

Octylbenzene and its derivatives, 540.

Octyldiacetothiënone, 535.

Octylthiophen, and bromo- and iodo-,

Octylthiophendicarboxylic acid, 535.

Œnanthamidobenzoic acid, 548.

Enanthylamine, 940.

Œnanthylidene, synthesis of a ketone from, 45.

Oils containing unsaponifiable fats, examination of, 103.

detection of adulteration in, 103.

- of hydrocarbons in, 395.

essential, testing, 394.

examination of, 1083.

- fat, detection of, in mineral oils, 103.

- formation of basic salts in the saponification of, 186. - mineral, estimation of resin oils in,

282.

- lubricating, new thickening material for, 651.

- and resin, testing for, in fat, oils, oleins, and fuller's fats, 581.

- oxidation of, 687. Olea fragrans, glucoside from, 1040. Oleaceæ, Japanese, glucosides from,

Oleic acid, action of sulphuric acid on, 442.

- oxidation of, 611.

- -- oxidation of, with potassium permanganate in alkaline solution,

Oligoclase and andesine, 776.

Olive oil, adulteration of, 182.

Olivenite from Utah, 516.

Olivine from Chile, analysis of, 214. - from the Isle of Bourbon, 775.

Opal from Nagasaki, Japan, 27.

Opianic and nitro-opianic acids, behaviour of, with phenylhydrazine, 550.

Opium, methods of determining morphine in, 1086.

Optically inactive compounds, decomposition of, 612.

– resolution of, 446. Orange, bitter, composition of the rind of, 576.

Orcinol, reaction of, with aniline, 873. Ores, estimation of arsenic in, 100,

Organic acids, pyrogenic decomposition of, 224.

- compounds, estimation of sulphur and halogens in, 918.

— refractive power of, 335.

- --- some, crystallographic examination of, 62.

- elementary analysis, 649.

Organism, animal, aromatic substances in, 730.

Orthoclase in geodes in basalt, 518. Orthophosphoric acid, 418.

neutralisation of, 1057.

Oryza glutinosa, Loureiro, 390. Oxalamidobenzoic acid and its deriva-

tives, 549. Oxalate developer for gelatin plates,

106. Oxalates, ethereal, action of phosphoric chloride on, 785.

Oxalic acid, detection of, in urine, 395. formation of, in vegetation,

734.

solubility of, 935.

Oxalodibenzamic acid, 549.

Oxal-o-toluide, 886.

Oxal-o-toluidic acid, 886.

Oxanilic acids, p- and o-nitro-, and their reduction, 147.

Oxidation and reduction, simultaneous, by means of hydrocyanic acid, 155.

Oxides, metallic, polymerisation of, 303.

Oximido-compounds and phenylhydrazine, reaction between, 701.

Oxy-coal-gas blowpipe, 417.

Oxydimorphine, 900.

Oxy-\beta-dinaphthylamine, 1036.

Oxygen, absorption spectra of, 749. absorption spectrum of, 189.

- action of hydrogen on, TRANS., 107.

- nascent hydrogen in increasing the activity of, 120.

- on hydrochloric acid under

the influence of light, Trans., 608. — atomic volume of, 661, 662.

- deviations of, at low pressure from Boyle's law, 591.

—— dissolved, estimation of, 579.

- emission of, by plants in coloured light, 642.

- forms of, obtained in the electrolysis of aqueous sulphuric acid, ŤRANS., 591.

- free, estimation of, in water, TRANS., 751.

--- in the air of forests, 1066.

- molecular compounds, 661.

--- preparation from bleaching powder, 418.

Oxygluconic acid, 683.

Oxyhæmoglobin, does water free from oxygen act on? 567.

Oxyketones, formation of, TRANS., 54. Oxymenthylic acid, 892.

Oxymethylene, action of, on amines, 138.

Oxymetric solution. Schutzenberger's, decomposition of, by light, 648.

Oxynitriles, volatility of, 605.

Oxythiodiphenylimide, constitution of,

Oxytiglic acid, 1009.

Ozone, formation of, in the electrolysis of aqueous sulphuric acid, TRANS.,

- production of, by the slow oxidation of phosphorus, 302.

- rate of decomposition of, 9.

P.

Palladium hydrogen as a reagent, 1071. Palmitic acid, oxidation of, 611.

Papain, 74.

and its action on vegetable proteïds, 642.

- digestion, 641.

Papaveraldine, 478.

Papaveric acid phenylhydrazine, 479.

Papaverine, 478.

- and crystallographic measurements of various derivatives and salts, 83. Papaveroline, 479.

Papaw juice, proteïds in, 642.

Papers, wood-, different percentages of water in, 112.

Parabanic acid, action of ammonia on, 141.

Paracarvacrotic acid, 346.

- aldehyde, **346**.

Paraffins from Pennsylvanian petroleum, physical properties of, 215.

higher normal, 998.

- liquid, action of heat on, 604.

Paraffinoïd carboxylic acids, isomerism of, 687.

Paraglycogen, 87.

Pararosaniline, dichloro-, 942.

Parasites, vegetable, action of ferrous sulphate on, TRANS., 119.

Paraxanthine, 266.

Paratartrates, resolution of, 446.

Pargasite, chemical composition of, 29.

Parvoline and its salts, 259. preparation of, 257.

Parvolinedicarboxylic acid, 259.

Peach oil, 644.

Pectolite, artificial, 517.

from Alaska, analysis of, 210.

Pentahydroxyanthraquinone, 556. Pentahydroxypimelic acid, normal, 936.

- lactone, 936.

Pentamethylbenzene, action of sulphuric acid on, 695.

Pentamethylenediamine and its derivatives, 528.

preparation of, 139.

Pentamethylenedicarboxylic acid (1, 2),

Pentamethylenetetracarboxylic acid, 225.

Pentamethylenimine, 139.

Pentamethylleucothionine and its dimethiodide, 54.

Pentamethyltriamidotriphenyl carbinol, 362.

Pentanetetracarboxylic acid, action of sodium on, 225.

Pentathionic acid, method for preparing, 850.

Pentethylbenzene, monochloro-, 231.

Pentenyl glycerol, 784.

Pentylamine, 940.

Peonal, 906.

Pepsin, 1051.

animal and vegetable, 271.
— fate of, 381.

Pepsinogen, 1051.

Peptone, conversion of, by the liver, 382.

occurrence of, in hen's eggs during

incubation, 166.

— preparation of, 1051.

Peptones, 819.

albuminoïds and gelatin, capillarimetric distinction between, 1087.

--- occurrence of, in fibromata of the uterus, 167.

--- precipitation of, 636.

— separation of albumin from, 1087. Perennial rye grass, analyses of, 909,

Perezonoxime, TRANS., 721.

Peridotite of Elliot Co., Kentucky, 993. Peridotites near New York, 433.

Periodic law, 503.

Perkin's reaction, TRANS., 317.

Permanganates, compounds of ammonia with, 983.

Peroxides as oxidising agents, 507.

Persbergite, analysis of, 31.

Peru balsam, testing, 181.

Petroleum, Caucasian, aromatic hydrocarbons of, 1015.

connection between illuminating power, flashing point, and boiling point, 402.

Pharmacosiderite from Sandberg (Hungary), 517.

Phellandrene and its derivatives, 1038. Phellandrene viamine, 1038.

Phenanthraquinone, 889.

Phenanthraquinonediguanyl, 556.

Phenanthrene, action of carbonyl chloride on, 248.

Phenanthro-eurhodine, TRANS., 400.

Phenazine, 1024.

Phenethylamine, 940.

Phenethylthiocarbamide, 873.

Phenethylthiocarbimide, 873.

Phenethylthiohydantoïn hydrochloride, 873.

Phenetoïl, dinitro-, 789.

--- trichloriodo-, 617.

— trichloro- and trichloronitro-, 616. Phenetoils, mononitro-, preparation of, 345.

Phenol, acetyldinitramido-, 613.

---- acetyltrichloro- and iodotrichloro-, 616, 617.

—— -blue, 146.

constituents of blast furnace tar, obtained by the Alexander and McCosl process at the Gartsherrie ironworks, examination of, Part I, Trans., 17.

--- crystallised, as a reagent for ni-

trates and nitrites, 99.

— dichloro-p-amido-, 1018.
— dichloro-p-nitro-, 1018.

—— dinitramido-, 791.

—— estimation of, 1081.

--- as tribromophenol, 1081.

- monobromo-, the so-called

"fourth," 1017.

- oxidation of homologues of, 542.

—— trichloro-p-amido-, 616.

Phenolcarbamide, 946. Phenolisatin, 155.

p-Phenolsulphonic acid. 1031.

Phenolsulphonic acid, chloramido-, 1019.

--- trichlorodiazo-, 617.

Phenolurea, 946.

Phenols and aldehydes, reaction between, 695.

---- heats of solution and of neutralisation of, 6.

introduction of the carboxyl-group into, 242.

p-nitro-, chlorinated derivatives of, 1018.

--- of complex function, heats of solution and of neutralisation of, 7.

Phenoxyethylene, trichloro-, 614.

Phenyl benzenesulphonate, 883.

—— benzoates, nitro-, 939.

p-bromo-, and a-tribromo-, iodochloride, 342.

---- carbonate, dibromo-, 789.

—— —— dinitro-, 789.

---- nitramido-, 789.

--- cyanate, action of, on polyhydric alcohols, 49.

--- dithiocarbonate, 789.

- iodochloride, 341.

--- isocyanate, 342.

mercaptan, o-amido-, formation of anhydro compounds of, from thio-anilides, 700.

—— — ainitro-, 693.

Phenyl methyl ketone, hypnotic properp-Phenylene diacrylmethyl ketone, 461. ties of, 169. Phenylenediacrylic acid, 469. – nitrobenzoates, 350. p-Phenylenediacrylic acid, 461. — nitro-, 939. m-Phenylenediamine, action of carbon --- p-nitro-, iodochloride, 342. bisulphide on, 1023. — nitro-, phenylcarbamate, 342. p-Phenylenediamine, dichloro, 941. phenylcarbamate, 342. o-Phenylenedipropionic acid, 469. ---- sulphide, dinitro-, 693. m-Phenyleneoxytrichlorethylene, 614. --- thiocyanate, dinitro-, 693. p-Phenyleneurethane, 50. — trichlorophosphate, 616. Phenylethoxyisoquinoline, 631. Phenylacetamide, action of bromine on, Phenylglucosazone, 933. Phenylglycin, o-nitro-, 351. Phenylacetic acid, action of sodium on Phenylhydrazine, action of, on amidocompounds of the benzene series, the ethereal salts of, Proc., 188. — derivatives of, 63. --- preparation of, 945. Phenylhydrazine and acid amides, 700. - and phenylpropionic acids, separaeommercial, substance contained tion of, 351. in, 349. Phenylacridine, derivatives of, 68. - cyanuric chloride, Trans., 742. - nitration of, 699. - hydrochloride, 68. Phenylallenylamidoxime and its deriva-Phenylhydrazinebenzopropionic acid, tives, **7**98 Phenylallenylazoximebenzenyl, 798. Phenylhydrazines, sulphonation of, 236. Phet ylallenylazoximepropenylcarb-Phenylhydroxyquinoline, 811. oxylic acid, 799. Phenylhydroxyquinolinecarboxylic acid, Phenylallenylazoximethenyl, 798. Phenylamidobenzoic acid, and some of and its ethyl salt, 161. a-Phenyl-y-hydroxy-p-toluquinoline, its salts, 68. Phenylamidoisoquinoline, 631. a-Phenyl-a-anilidopropionamide, 800. Phenyl-m-hydroxytolylamine, 873. α-Phenylindole and its derivatives, 711. 7-Phenyl-a-anilidopropionitrile, 800. Phenylazoacetophenone, and o-nitro-, Phenylisoquinoline, 630. Phenylmelamine, 523. Phenylazobenzoylacetic acid, and o-ni-Phenylmelamines and their derivatives: normal, iso-, and asymmetric comtro-, 62. pounds, 233. Phenylazo - m - chlorodimethylamidobenzene, m-nitro-, 944. Phenylmesitylenyl carbinol and its de-Phenylazodimethylamidobenzene, rivatives, 542. chloro-, 944. Phenylmethylhydroquinoline, m-amido-, m-nitro-, 944. 561.Phenylazo-m-xylenol, 348. Phenylmethylhydroxypyrimidine, Phenylbenzylenebenzylamidine, 793. rivatives of, 46. Phenylbromisosuccinic acid, p- and o-Phenylmethylnitramine, dinitro-, 1022. nitro-, TRANS., 362, 363. Phenylmethyloxyquinizine, 898, 899. Phenylbutindicarboxylic acid, TRANS., Phenylmethylquinoline and its m-nitroand m-amido-derivatives, 560, 561. y-Phenylbutyric-o-carboxylic acid, 243. Phenylnitromethane, 693. Phenylcarbamide, action of halogenated Phenylparaconic acid, nitration of, 67. Phenylpropiolic acid, TRANS., 441. amines on, 795. Phenylchloronitroisoquinoline, 631. Phenylpropylamine, 940. Phenylcitraconazide, nitro- and aceto-, di- and tri-nitro-, 455. Phenylpropylnitramine, trinitro-, 455. Phenylcyanamide and its derivatives, Phenylpyrrolineazobenzene, 1042. 4'-Phenylquinaldine, synthesis of, 630. Phenyldibromisosuccinic acid, Trans., Phenylquinaldinic acid, 1045. Phenylquinoline, 1045. - m-nitro-, Trans., 361. - amido-, 1045. Phenyldibromonitromethane, 693. - p- and o-, and their derivatives, 80. Phenyldihydroquinolylmethane, 720. α-Phenylquinoline, derivatives of, 721. Phenyldi-o-tolylguanidine, 1036. p-Phenylquinolinecarboxylic acids, 68. Phenylene cyanate, para- and meta-, 50. o-Phenylquinolinemethyl platinochlo-

ride, 82.

p-Phenylene diphenyl ketone, 349.

```
β-Phenylquinolinesulphonic
  acids and their salts, 82.
Phenylquinolylmethane, dinitro-, 720.
Phenylsulphoneacetone, 801.
Phenylsulphonic acid, o-hydroxy-, 707.
    - anhydride, Trans., 692.
Phenylthiourethane, oxidation of, 876.
Phenyl-p-toluene, 883.
Phenylvinylhydroxyethenylamidoxime,
  799.
Phillipsite from Brazil, 319.
   – group, 318.
Phloretin, Trans., 860.
Phloroglucinol, chloro- and bromo-
  derivatives of, 52.
—— derivatives of, 232.
- melting point of, 1020.
—— synthesis of, 223.
— tribromo-, 232.
 - trioxime of, 350.
Phloroquinone, 696.
Phosphate, precipitated, use of ammo-
  nium citrate in the analysis of, 579.
Phosphates, estimation of iron and alum-
  inium in, 491, 393.

    precipitated, manuring with, 1069.

—— raw, treating, 108.

    soluble, new method for estimating,

  741.
Phospho-hypophospho-tungstate, 427.
Phosphoric acid, combinations of, with
  titanic, zirconic, and stannic acids, 670.

    determination of, in slags,

  489.
         - estimation of, in basic slag,
  740.
         - estimation of, in Thomas-
  process slag, 835.
         - manurial action of various
  forms of, 1069.
         - precipitation of, as ammonium
  magnesium phosphate in presence of
  ammonium citrate, 834.
  — preparation of, 201.
— soluble in soil, 392.
Phosphoroso-molybdates, 427.
Phosphoroso-phospho-molybdates, 427.
Phosphoroso-phospho-tungstates, 427.
Phosphoroso-tungstates, 427.
Phosphorus acids, titration of, 489.
    behaviour of, with iron and slags,
  426.
   - chlorobromides, Trans., 815.
 - determination of, in iron and steel,

    estimating, in iron and steel, 280.

       fluorides, action
                          \mathbf{of}
                                red-hot
 platinum on, 592.
  Mitscherlich's test for, 919.
    - modification of Sonnenschein's
 method for determining, in iron and
 steel, 1073.
```

Phosphorus, modified molybdate method for estimating, in steel, 280. - oxychloride, action of nitric acid on, TRANS., 224. – oxyfluoride, 767. pentafluoride, 303. – pentasulphide, 767. -simplification of the molybdate method for determining, 835. – suboxide, Trans., 834. – tetroxide, Trans., 833. trichloride, action of bromine on, TRANS., 815. - trisulphide, 768. Phosphotungstates, ortho-, pyro-, and meta-, 511. Phosphovanadates, 205. Phosphovanadicovanadates, 205. Photographic sensitiveness and absorption, connection between, 405, 958. Photography, colour, in natural colours, 749.Photosantonic acid, 73. Photosantonins, two isomeric, 73. Phthalaldehydic acid, 549. Phthalamic acid, 705. Phthalamide, amido-, 1025. Phthalethylidene, 243. Phthalic acid, action of ammonium and potassium thiocyanates on, 704. - a-chloro- and a-bromo-, 353. ------ β-chloro-, Trans., 526. - --- chloro-, constitution of, 353. - iodo-, and some of its salts, 61. -- --- monobronio-, Trans., 187. ------ β-sulpho-, Trans., 510. - acids, constitution of, 67... - tetrabromo-, 230. - alcohol, action of sulphuric acid on, 791. - oxidation of, 455. — amide, β -sulpho-, Trans., 521. --- anhydride, action of phosphoric chloride on, 705. - --- perchloro, crystalline form of, -- β-sulpho-, Trans., 515. — chloride, chloro-, TRANS., 527. — chlorides, sulpho-, TRANS., 521. — β-sulpho-, TRANS., 520, 5±1. Phthalide, 469. --- action of phenylhydrazine on, 883. – amido-, 242. ----- bromo-, 549. — derivatives of, 242. p-dichloro-, 808. Phthalimide, β-chloro-, Trans., 529. Phthalimidoxime, 803. Phthalimidylpropio-lactone, 243. β-Phthalimidylpropionic acid, 243. Phthalophenylhydrazide, 1025.

157.

Phthalyl, 882. — derivatives, 243. - tetrachloride, 705. Phthalylaspartic acid, 621. Phthalyldiphenylaminaspartide, 621. Phthalylimide, acetyl-, 704. Phthalylmethylphenylasparagine, 621. Phthalylphenylhydrazine, 353, 1025. Physics and chemistry, relations between, 961. Phytalbumose, insoluble, 1065. Phytochemical studies, 576. β -Picoline, 256. supposed optical rotatory power of, 368. Picolines, α - and γ -, and their derivatives, 256. Picrates, heat of formation of 841. Picrolite, from Lower Silesia, analysis of, 212. Picrotoxin, separation of, 284. Pig, exchange of materials in, 381. - gastric juices and histology of the gastric mucous membrane of, 271. Piliganine, 816. Pilocarpidine, 85. - and its salts, 725. Pilocarpine, 1048. — decomposition of, 900. – salts, 725. Pimaric acids, 365, 1038. Pine, common, composition \mathbf{of} the pollen of, 91. Pines, presence of mannitol in the cambium sap of, 1062. Pinus silvestris, ash of the pollen of, 172. pollen of, 736. β -Pipecoline, action of methyl iodide on, 257.Piperidine, 139. - from pentamethylenediamine, 269. hydroferrocyanide, crystalline form of, 522. Pipitzahoic acid, Trans., 709, 712. action of hydroxylamine and phenylhydrazine on, TRANS., 723, 724. - amido-, TRANS., 720. ----- anilido-, Trans., 717. — dibromide, Trans., 731.
— o- and p-toluido-, Trans., 718, 719. Pistomesite from the coal-measures, 775. Plagioclase from Chile, analysis of, 214. Plant poison, potassium chloride as, 389. - tissues, migration of nitrates in, 484. Plants, absorption of the non-alimentary substances by, 171. a new nitrogenous constituent of,

assimilation of asparagine by, 1061. -- chlorophyll, and the reduction of

carbonic anhydride by, 626.

Plants, development and absorption of heat by, 483. emission of oxygen by, in coloured light, 642. essential elements of, 389. - estimation of nitrogen in, 955. existence of the elements of milksugar in, 575. - germinating, influence of oxygen on the disengagement of carbonic anhydride, 274. --- lecithin in, 1064. – methyi alcohol from, 274. - of different species, experiments in grafting between, 645. - respiration of, new method of observing, 574. - under abnormal conditions, 575. Platinum, basic salts of, 987. — -black, absorption of mercury vapour by, 766. chloride, decomposition of, in solution, 975. —– hydroxides, 987. - native, analysis of, 181. quantitative separation of, from tin, antimony, and arsenic, 651. salts, double, constitution of, 857. silicide, 124. Platinocyanides, alkaline, 604. Platoso oxalic acid, 532. Plynthite, from Skye, 130. Pollen of Coryllus avellana and Pinus sylvestris, 736.- of the common pine, composition of, 91. Polygonic acid, 949. Polylithionite (lithium mica) Greenland, 677. Polythymoquinone and its derivatives, 239. Poplar wood, vellow colouring matter

from, 558.

Portland cement, effect of the presence of magnesia in, 770.

Positions in the pyridine series, method for determining, 158.

Potatoes, cultivation of, 390, 577.

Jensen's manner of protecting from disease, 1067.

— manuring, 578. — unripe, composition of, 485.

Potassium alum, combination of, with water, 981.

anhydronitrosulphaminebenzoate, 804.

antimony sulphide, 429.
bromoxynaphthaquinonesulphon-

ate, Proc., 232. --- camphocyanate, 891. Potassium chlorate, arsenic in, 99. - --- decomposition of, by heat, 594; Proc., 141. electrolysis of, 408. — estimation of, in organic mixtures, 179. - chloride as a plant poison, 389. doubly refracting crystals of, 206. - electrical conductivity of solutions of, 653. - chlorochromate, decomposition by heat, 854. - chromate, artificial formation of twin crystals of, by increase of temperature, 17. - chromates, absorption spectra of, 839. copper sulphate, anhydrous, heat of dissolution of, TRANS., 300. ----- anhydrous, specific heats of three modifications of, Trans., 14. - -- hexahydrated, heat of dissolution of, TRANS., 301. - - modifications, and heat of dissolution of, TRANS., 1. fluochromate, decomposition by heat, 855. fluoride, compounds of, with fluorides of heavy metals, 670. hexatellurite, 767. – hydrates, 421. hydrogen sulphate, dimorphism of, - ____ tartrate, solubility of, 1082.
- ___ tartrates, crystalline form of, 612. - hydroxide, alcoholate of, 979, 980. - iodide and starch solution, permanent, 486. – magnesium sulphate, anhydrous, heat of dissolution of, Trans., 297. - -- hexahydrated, heat of dissolution of, Trans., 298. - - modifications, and heat of dissolution of, TRANS., 7. — manganese chromate, 426.
— naphthaquinonebromhydroxysulphonate, Proc., 232. - nitrate, action of sulphuric chlorhydrin on, Trans., 225. - action of sulphuryl dichloride on, TRANS., 226. -- and chlorate, 664. — peroxide, 768. — platinocyanides, halogen additive products of, 605. -salts, physiological action of, 88, 385. selenides, 505, 589. - seleniocyanate, action of chlorine on, 1002.

- sulphate, artificial formation of I

- twin crystals of, by increase of temperature, 17.
- Potassium sulphate, heat of dissolution of, Trans., 306.
 - --- tartrotellurite, 336.
- thiocyanate, nitrification of, by soil, Trans., 637.
 - --- thiotungstates, 510.
- -- trichloracetate, decomposition of, by water, 332.
 - trithiocyanurate, 324.
- Precipitates, washing and drying, without exposure to the carbonic acid of the atmosphere, 1070.
- Prehnitene and its derivatives, 694.

Prehnitylic acid, 695.

- Pressure and boiling point, relations between, 590.
- influence of, on the resistance of electrolytes, 586.
- --- curves of fluids at their critical condition, 964.
- Printing, new blue for, 187.
- Prochlorite from the Columbia district, 520.
- Propanetetracarboxylic acid, 691.
- Propargylic acid, iodo-, 530.
- polymerisation of, 1009. Propenylbenzoic acid, o-amido-, 466.
- Propeptone or hemialbumose, 567.
- o-Propiolphenoxyacetic acid, 66.
- Propione, preparation of, by Perkin's method, TRANS., 323.
- β -sulpho-, 866.
- vapour-pressures of, Trans., 766, 774, 776.
- Propiophenoneorthocarboxylimide, 620. Propiothiënone and its derivatives, 539. Propyl alcohol, action of *Bacterium* aceti on, Trans., 177.
- normal, vapour-pressures of, TBANS., 763, 771, 773.
- group, intermolecular changes in, 464.
- hydrogen oxalate, 785.
- isobutyl quinol, 454.
- salts of normal fatty acids, boiling points and sp. volumes of, 966.
- Propylamine, normal, 1004.
- Propylbenzene, p-bromo-, 945.
- p-Propylbenzoic acid, o-nitro-, 464.
- Propylbenzoic acids, synthesis and constitution of the two, 944.
- α-Propyl-β-chlorocinnamic acid, Trans., 163.
- p-Propyleinnamic acid, o-nitro- and o-amido-, 464.
- Propylene, formation of, from glycerol, 136.

Propylenedicarboxylic acid, 611. Propylethylquinoline, 262. p-Propyl-o-methylbenzoic acid, 463. Proteic acid, 270. Proteïd digestion, 377. influence of cellulose on the decomposition of, in the nutrition of herbivora, 728. - substance in latex, 828. Proteïds, 270. blood, of lower vertebrata, 1050. influence of carbohydrates and other substances on the putrefaction of, 729. Protochlorophyllin, 626. Protoglobulose, 819. Protozoa, cellulose in, 640. presence of glycogen in, 87. Pseudocholoïdanic acid, 817. Pseudocumene, bromination of, 451. ---- derivatives, 804. —— dibromo-, and its derivatives, 710. Pseudocumenephthaloylic acid, crystalline form of, 619. Pseudocumenesulphonic acid, 709. - ---- bromo-, 709. Pseudocumenol, 710. - action of bromoform and iodoform on, 143. —— dinitro-, melting point of, 144. —— m-nitro-, 144. Pseudocumenyl alcohol, 615. methyl ether, dibromo-, and m-nitro-, 144. Pseudocumidine, 143. Pseudocumyl bromide, 452. Pseudocumylenethenylamidine, amido-, 144. Pseudocumylphthalide, 1029. Pseudo-dielectrics, 754. Pseudomorphine, reactions of, 1047. Pseudomorphs, 21. — after antimonite, 22. of turquoise after orthoclase, 25. Pseudophenanthroline, 1045. Pseudoxanthine, 634. Ptilolite, 990. Ptomaines and leucomaines, 634. formation of, by cholera bacilli, 173. from poisonous cheese, 373. of cholera, supposed, 1049. Pulmonary tissue, action of, in the expiration of carbonic anhydride. 1052.Pumpkin sprouts, nitrogenous stituents of, 173. Purpurin, synthesis of, 475. Putrefaction, chemical products of, in their relation to disinfection, 112. Pyenophyllite from Aspang, 33. Pyranilpyroic acid and anhydride, 551. Pyrene, 718, 948.

Pyrene ketone, 948. Pyrenic acid, anhydride and imide, 718. constitution of, 949. Pyridanthrilic acid, 950. Pyridine, action of acetic chloride on, 368. - alkaloïds, 476. derivatives, 76. - hydroxylation of, 368. — ethiodide, 897. — methiodide, 897. - quinoline, &c., series, colour reactions for determining the constitution of carboxylic acids of the, 898. series, method for determining positions in, 158. Pyridine-choline and its derivatives, 78. Pyridinedicarboxylic acid [2:6], 559. -[3:5], 478.- Böttinger's, 368. - identity of, with lutidinic acid, 257. --- acids, 477. **β-Pyridine-α-lactic acid, 900.** Pyridinemuscarine and its derivatives, Pyridineneurine and its derivatives, 78. Pyridinesulphonic acid, 708. β-Pyridine-tartronic acid, 901. Pyridinetetracarboxylic acid, symmetrical, 477. 2, 5, 6 Pyridinetricarboxylic acid, 720. Pyrimidine, tetrachloro-, 226. Pyrimidines, 45. Pyrites, estimation of sulphur in, 280, Pyrocinchonic anhydride, 1012. Pyrogalloquinone, 696. Pyrogenic decomposition of organic acids, 224. Pyromellitic acid, dinitro-, and its ethyl salt, 64. Pyrometer, Siemens', modification of, Pyromucic acids, brominated, 446. Pyroxene, new type of, 776, 990. Pyrroline, action of alloxan on, 897. action of paraldehyde on, 1042. - boiling, action of potash on, 367. condensation-product of acetone with, 1043. condensation with alloxan, 367. constitution of, 626. conversion of, into pyridine, 367. derivatives, synthesis of, 75. ---- dinitro-, 718. — potassium-, 367. ---- tetrabromide, 521. - transformation of, into pyridine, Pyrrolineazobenzene, 1041. Pyrrolineazobenzene-azo-β-naphthalene.

Pyrrolineazo-p-dimethamidobenzene, 1042.Pyrrolineazo-a-naphthalene, 1042. Pyrrolineazo-\(\beta\)-naphthalene, 1042. Pyrrolineazo-p-toluene, 1041. Pyrrolinediazobenzene, 1041. Pyrrolinediazo-α-naphthalene, 1042. Pyrrolinediazo-β-naphthalene, 1042. Pyrrolinedicarboxylic acid, 719. Pyrryl methyl carbinol, 1042. pinacone, 1042. Pyrrylaldoxan, 897. Pyrrylene dimethyl ketone and its mononitro-derivative, 74. — —— nitro-, 718. Pyrrylketonedicarboxylic acid, 938.

Q.

Pyruvic acid, pyrogenic decomposition

of, 224.

Qualitative analysis, Eyster's scheme for, 100. Quartz, fibrous, from the Cape, 603. – from Burke, N. Carolina, 27. velocity of light in, 653. Quartz-felsites from the Cheviot district, Quercetin, 366. and its derivatives, 251. Quercetyl phenylcarbamate, 50. Quercitol, constitution of, 335. Quercus rubra, analyses of white and green leaves of, TRANS., 839. Quercyl pentaphenylcarbamate, 49. Quinaldine, bye-products of, 370. Quinaldine-acrylic acid, 265. Quinaldine-aldehyde, 265. Quinaldinic acid, 951. p-Quinanisoïl and its derivatives, 79. Quinic acid, constitution of, 355. Quinine hydrate, 371, 813. sulphate, assay of, 397. conchonidine in, 813. - --- commercial, cinchonidine in, 632. commercial, examination of, 182. optical analysis of, 1086. Quinol, action of o-toluidine on, 941. - derivatives of the benzene series, diamido-, and its derivatives, 1024. - p-dichloro-p-dibromo-, crystalline form of, 543. formation of, 695. preparation of, 790. Quinolformic acid and anhydride, 706. Quinolhydrocyanic acid, 706.

Quinoline aldehyde, 264, 265, 370. - and substituted quinolines, preducts of the action of hypochlorous acid on, 559. - bases, colouring matters derived from, 82. – chloriodide, 158. - m-chloro-, and its derivatives, 159. – derivatives, 560. - action of hypochlorous acid on, 370. constitution of, 810. — formation of, by the action of phosphoric chloride on the malonates of primary aromatic bases, 161. — from isatinic acid, 370. - prepared from meta-substituted amines, constitution of, 79. – series, synthesis in, 161. - synthesis, 1045. Quinolines, formation of, from metasubstituted amines, 161. Quinoline-a-acrylic acid, 264. Quinolinecarboxylic acid, 811. Quinolinedicarboxylic acid (1, 4), 811. β -Quinolinedisulphonic acid, 629. Quinoline-p-sulphobenzylbetaïne, 628. a-Quinolinesulphonic acid, 628. Quinoline-o-sulphonic acid, derivatives of, 628. Quinoline-p-sulphonic acid, 628. Quinolylacetaldehyde, 721. Quinolyl-a-hydroxypropionic acid, 721. Quinoxaline, p-amido-, and its salts, 722.Quinoxalines, 82, 561, 722. preparation of, 1046. Quinone carbonate, nitroxy-, 789. - chloro-, 1018 – diacetyldiamido-, 1024. - p-dichloro-p-dibromo-, crystalline form of, 543. preparation of, 790. Quinonechlorimide, chloro-, 1019. Quinonedichlorimide, dichloro-, 941. Quinonephenolimide, 147. Quinonetetracarboxylic acid, 550.

Rabel water, estimation of hydrogen ethyl sulphate in, 1079.
Raffinose, composition and properties of, 220.

— from molasses, cotton-seeds, and eucalyptus manna, 138.

— in mixtures, estimation of, 582.

Raffinose, presence of, in barley, Thans.,

 (mellitose), source of, in the products of the manufacture of sugar,

Rain water, nitrogen compounds in, 737.

Ranunculaceous plants, volatile constituents of, 365.

Rare earths, fractionation of, 423.

Raspberry juice, 387.

Reactions, rate of, 846.

Reduction and oxidation, simultaneous, by means of hydrocyanic acid, 155. Red-nickel, 313.

Resacctic acid, 1010.

Resacetophenone, 239.

Resin, estimation of, in soaps, Proc., 175.

- estimation of, in soaps and fat, 747.

- oils, testing for, in fat oils, oleins, and fuller's fats, 581.

- spirit, presence of cymene and an aromatic hydrocarbon in, 939. Resorcinol, action of o-toluidine on, 941.

aluminium chloride, 143.
combination of chloral with, 1020.

derivatives, 50.

--- dinitro-, 791.

Benedikt's, 235.

Respiration, intramolecular, 170. of leaves in the dark, 170.

Retinal rods, chemistry of, 375.

Retinole, 185.

Rhamnetin, 252, 366.

Rhizopods, digestion in, 1053.

Rhodanic acid, 325.

- — homologue of, 326.

Rhodium, colour reaction of, 125.

compounds, 310.

- sodium chloride, decomposition of, in solution, 975.

Rhodonite, artificial production of, 214. from Långbån and Pajsberg, 778. Rhodopsin, 375.

Rice-starch, researches on, 221.

Richellite, 127.

Rinkite from Kangerluardsak, Greenland, 676.

River waters, destruction and formation of nitrates in, TRANS., 632, 656, 664. Rock-salt, blue, 516,

Rodents, hæmoglobin and methæmoglobin crystals of, 637.

Rodna, bluish-gray mineral crusts from

Rosaniline sulphate, physiological action of, 272.

Rose-trees, experiments with ferrous sulphate on, Trans., 122.

Rosolene, 185.

Rubellan, 213.

Rubidium salts, physiological action of, 88, 385.

Ruminants, amount of volatile acids in the excrements of, 87.

S.

Saccharin, digestion of, 379.

Saccharose, a new compound of, 863.

Saccharoses and glucoses, some, succession of the rate of retrogressive birotation of, with regard to their constitutional formulæ and the extent of affinity, 220.

Saccharyl phenylcarbamate, and the meta-compound, 49, 50.

Safflorite, massive, 209.

Saffron, adulterations of, 584.

Safranine, 1026.

physiological action of, 272. Safrole, constitution of, 95, 697.

Salicamidobenzoic acid, 548.

Salicin, solubility of, 366.

Salicylic acid, action of, on ferments, 386.

- chloro-, chloriodo-, and nitro-, 704.

- detection of, in beer and wine, 924.

- acids, preparation of substituted,

— aldehyde, action of, on malonic acid, Trans., 365. Salicyloxyacetic acid and its ethyl salt,

Saline solutions, electrical conductivity of, 753.

Saliva, diastatic action of, 638.

diastatic ferment in, 726.

Salt solutions, electrical properties of, 4. electrical and thermal properties of, 925.

saturation of, 763.
supersaturated, electrical conductivity of, 654.

- — supersaturation of, 300.

Salts, acid and double, existence of, in aqueous solutions, 925.

- apparatus for the determination of the temperature of decomposition of, Рвос., 205.

- conductivity of, 114.

- containing water, dissociation of, and conclusions drawn therefrom as to the constitution of the salts, 10.

dissolution of, influence of temperature on the heat of, 499.

double, electrical conductivity of, 407.

Salts, double, heat of formation of, TRANS., 287.

- electrical conductivity of mixtures of, 839.

- electrolysis of, 115, 407.

- influence of temperature on the heat of dissolution of, 499.

— relations between the heat of formation of, and the initial rate of their formation, 116.

Samarium, spectrum of, 837.

Sandmeyer's reaction, 625.

Sandstone, barium sulphate as a cementing material in, 35.

weathering of, 35.

Sanidophyres, so-ealled, from the Siebengebirge, 603.

Santonin, action of phosphorus pentachloride on, 157.

--- constitution and derivatives of, 73.

---- estimation, 495. Saphirine from Greenland, 519.

Saponification, velocity of, 416.

Saponin, 367.

Sativic acid, 868.

Scapolite after garnet, alteration-pseudomorphs, 129.

---- group, 318.

Scheelite from New South Wales, 774. Schefferite from Långban and Pajsberg, 778.

Schikimene, 95.

Schikimic acid, 95.

Schikimipierin, 95.

Schlackenkobalt, analysis of, 209.

Schloesing's law concerning the solubility of calcium carbonate in water containing carbonic anhydride, 120.

Sea-water, proportion of bromine in, 134.

Sebacic acid, oxidation of, 335.

Seeds, action of hydrocyanic acid on, 575.

germinative power of, after exclusion of air and drying at high temperatures, 171.

minoïds in, 1088.

various, comparative researches on the formation of amides during the germination of, in the dark, 90.

Selenides, crystalline and amorphous, heats of formation of, 962.

- from the Andes, 22.

of the alkaline earths, 840.

thermochemistry of, 961.

Selenious acid, action of sulphurous acid on, 302.

Selenites, relation of, to sulphites, Trans., 584.

Selenium battery, 107.

cells, sensitiveness to light of, 2.
 heat of transformation of vitreous into metallic, 840.

--- tetrachloride, compound of auric chloride with, 310.

Semseyite, 313.

Sensitising action of dyes on silver chloride and bromide, 497.

Separator, Danish, experiments with, 290.

Sepine, 933.

Serpentine, electrical conductivity of, 113.

Serum, colouring matter of, 1050.

--- luteïn, 1050.

Sewage, estimation of nitrogen in, 1072.
—— water, purification of, 286.

Sheep, feeding with raw sugar, 569.

Sheep's fescue grass, fine-leaved, analysis of, 909-912.

Siemens' pyrometer, modification of, 112.

Silfbergite, analysis of, 34.

Silica, action of, on haloïd salts of the alkalis, 664.

— and silicates, action of hydrofluoric acid on, 979.

Silicates, isomorphous, 30.

Silicon aromatic compounds, 618.

--- condition of, in pig iron, TRANS., 215.

---- estimation of, in iron, 835.

— in organic compounds, 649, — influence of, on the properties of cast iron, TRANS., 130.

Silos, preservation of sliced beets in, 275.

Silver acetate, 440.

- and lead thiobismuthite, 515.

and the alkalis, double nitrates of, 122.

— bromide and chloride, sensitising action of dyes on, 497.

—— butyrate, 440.

---- carbonate, 980.

- explosive, Berthollet's, 850.

iodide from New Mexico, 26.
 salts, comparative effect of different parts of the spectrum on, 749.

— subchloride, non-existence of, 770. Skeletins, 481.

Slag, basic, estimation of phosphoric acid in, 740.

—— Thomas, manuring oats with, 391.

Slag, basic, manuring with, 1069.

Slags, determination of phosphoric acid, iron, and alumina in, 489.

Similax glycyphylla, sweet principle of, Trans., 857.

Snake poison, 1057.

Soaps, basic salts in, 186.

estimation of resin in, 747, Proc., 175.

- solution, use of, 1076.

Soda liquor, causticised, estimation of caustic in, 1074.

- titration of, in presence of aluminium, vanadium, and tungsten, 650.

Sodalite from Litchfield, Maine, 677. Sodio-ammonium tungstates, two new, 206.

Sodium alum, monosymmetrical, 595. ammonium racemate, 533.

 paratartrate, crystallisation of, 533.

- bromate, use of, in volumetric analysis, 280.

camphocyanate, 891.carbonate, limits of the conversion of, into sodium hydroxide by lime, 203.

- chloride, determination of, in presence of potassium chloride, 920. doubly refracting crystals of,

206.

- diphenylenenaphthaquinoxalinesulphonate, 889.

 ferrocyanide, water of crystallisation of, 860.

 fluoride, compounds of, with fluorides of heavy metals, 670.

– hydrates, 422.

 hydroxide, limits of the conversion of sodium carbonate into, by lime,

- hypophosphates, crystalline form of, 768.

— manganites, 982.

- a-naphthol-p-diazodiphenylsulphonate, Trans., 383.

- β-naphthol-p-diazodiphenylsulphonate, Trans., 383.

 nitrate, formation of beds of, 210. · --- testing, for iodine and iodic acid, 834.

peroxide, 768.

- phenol-p-diazodiphenylsulphonate, TRANS., 382.

— phenylhydrazine, 1025.

potassium racemates, 445.

 pyrophosphates, crystalline form of, 768.

quinol-p-diazodiphenylsulphonate, TRANS., 382.

 resorcinol-p-diazodiphenylsulphonate, Trans., 382.

Sodium selenides, 505, 589.

- sulphate, anhydrous, heat of dissolution of, TRANS., 302.

---- decahydrated, heat of dissolution of, Trans., 303.

- decomposition of ammonium sulphate by means of, 107.

sulphide, hydrated, 980.

- thiosulphate, action of, on metallic

- as a substitute for hydrogen sulphide, 1071.

Soja bean, 829.

Soil, nitrogenous organic compounds in,

Soils, ammonia in, 831, 832.

- argillaceous, absorption of free nitrogen from the atmosphere by,

- cultivated, absorption of nitrogen by, 275.

- estimation of ammonia in, 739, **74**0.

oxidation of ammoria in, 917.

- which absorb free nitrogen, organic carbon in, 736.

Solidification, extension of the law of, 763.

- solidifying points, determination of, 417.

Solids, so-called critical pressure of, 656.

- and liquids, molecular weights of, (evidence deducible from the study of salts), 198. Solution, 847.

- correlation of physical properties with concentration, 413.

Solutions, aqueous, conditions of equilibrium in, 12.

- equilibrium of, 925.

- heat of dilution of, 414. Sozolic acid, 707.

Sparteïne and its salts, 370.

sulphate, physiological action of,

Specific gravity of gases, determination of, 412.

heat of alloys of lead and tin,

- of antimony and its compounds, 655.

of solid organic compounds and their chemical composition, relation between, 587.

— remission, so-ealled, 5.

- rotatory power, variation of, 406. viscosity of organic liquids and their aqueous solutions, 657.

- volumes and atomic volumes, 972. - of ethereal salts of normal

fatty acids, 966.

- Specific volumes of liquids and absolute boiling points, relation between, 590.
- Spectra, absorption, of oxygen, 749.

 fluorescence of $Z\alpha$ and $Z\beta$, 666.
- Spectroscope, absorption, new, 113.
- for furnaces and for the Bessemer
- process, 190.

 Spectrum, absorption, and sensitising action of dyes on silver bromide, re-
- lation between the, 584.

 comparative effect of different parts of the, on silver salts, 749.
- of nitrogen at the negative pole, 957.
- of the terbia earths, 293.
- solar, effect of dyes on the behaviour of silver bromide towards, 405.
- Speiskobalt, examination of, 209.
- Spergula arvensis (Spurrey), spurrey seed, and spurrey silage, composition of, 173.
- Sphene, American, cleavage of, 317.
- Spheroidal state, quantitative evaporation of liquids in, 647.
- Spirographidine, 482.
- Spirographin, 482.
- Spongin, 481.
- Spring at Chabetout, deposit from, 215.
- Springs, hot, of Leuk, 996.
 ——thermal, of Hammam Salahine, 996.
- Spurrey (Spergula arvensis), spurrey seed, and spurrey silage, composition of, 173.
- Stannic acid, combination of phosphoric acid with, 670.
- chloride, compounds of, with hydrogen chloride, 984.
- Stanno-phospho-molybdates, 511.
- Stanno-phospho-tungstates, 511.
- Starch, anhydrous, action of sulphuric acid on, 44.
- factories, waste water from, 1066.
 formation of, in leaves supplied with sugar, mannitol, and glycerol, 902.
- inversion of, by formic acid, 1061.
 iodide of, decolorisation by heating,
- --- rice-, researches on, 221.
- soluble, and its physiological function in vegetation, 903.
- --- solution of, in leaves, 827.
- undissolved, estimation of, in sweet mash, 746.
 - varieties of, 527.
- violet coloration of, caused by iodine chloride and bromide, 783. Staurolite, chemical constitution of, 32.
- Staurotide, 319.
- Steam and carbonic oxide, action of induction sparks on, TRANS., 103.
- Stearic acid, oxidation of, 611.

- Steel, determination of phosphorus in, 1073.
- estimation of carbon in, 98.
- --- phosphorus in, 488.
- ingots, irregularities in the composition of, 108.
- modified molybdate method for estimating phosphorus in, 280.
- Stomach, formation of hydrochloric acid in, 639.
- Strontium hydrates, 421.
- manganite, 425.
- formation and dissociation of,
- —– titanate, 985.
- Strychnine, amido-, 268. —— bromo-, 268.
- --- chromates, 564.
- —— citrate, 1047.
- ---- crystalline, sp. gr. of, 1047.
 - hydrate, 814.
- —— nitro-, 814.
- ----- hydride, 815.
- influence of, on the glycogen of liver and muscle, 1054.
- nitro-, 267.
- Strychninedisulphonic acid, 269.
- Strychninesulphonic acids, 269.
 - Strychnol, 814.
- Succinates, solubilities of, 935.
- Succinic acid, dibromo-, action of aniline on, 791.
 - pyrogenic decomposition of, 224.
- —— solubility of, 935.
- Succinimide, action of ammonia on, 141.
- Succinylphenylhydrazine, 354.
- Sugar, accumulation of, in the root of the sugar-beet, 1063.
- as an addition to cattle food, 727.
- beet, relations between the density, the richness in sugar, and the purity of the juice of, 915.
- cane-, action of Barterium aceti on, TRANS., 181.
- and the hydroxybenzoic acids, 932.
- of, 1004.
- grape-, detection of, in leather, 745.
- improvements in the manufacture of, 111.
- in the blood with reference to nutrition, 382.
- in urine on a diet of cane-sugar, 383.
- phenylhydrazine as a test for, 744.
- —— influence of superphosphates on the production of, 832.

Sugar, invert, composition and fermentation of, 169. of, 743. estimation of, 111. – iodides, 978. - and selective fermentation, 90. mation of, 739. maple-, industry, 289. - milk- and cane-, determination of mixtures of, 582. - new, presence of, in the wheat chloride with, 310. germ, 734. of Symphoricarpus racemosa, 92. - raw, feeding sheep with, 569. - two new reactions for, 923. Sugars of some cereals and of germintion of, 180. ated grain, Trans., 58, Proc., 142. Suint, composition of, 902, 1055. o-Sulphaminebenzoic acid, 804. tained, Trans., 591. Sulphates, double, modifications of, Parts I and II. Part II, specific heat determinations, Trans., 1, 12. analysis of, 833. - multiple, Trans., 123. Sulphides, artificial production of, 207. Sulphinic ethers, aromatic, oxidation to sulphonates, 711. Sulphites, action of phosphorus oxychloride on, TRANS., 588. constitution of, Trans., 533. Sulphobenzide, decomposition of, 1031. Sulphobenzide-m-sulphonic acid, 1031. Sulphochloracetic acid, 786. Sulpho-colouring matters, production of, by electrolysis, 187. 302. Sulphonamic acids, aromatic, 708. Sulphonates, action of, on salts of dihaphosphide, 978. logenated fatty acids, 883. Sulphonediacetic acid, action of nitrous acid on, 222. nydrate of, 117. Sulphonediisovaleric acid, 333. Sulphoneketones, 801. Sulphonic acids, aromatic, direct conversion of, into amido-compounds, 623. aromatic, hydrolysis of, 355, Proc., 234. a-Sulphophthalic acid, Trans., 512. 199. β-Sulphophthalic acid, Trans., 510. - anhydride, Trans., 515. — amide, Trans., 521. - chlorides, TRANS., 520, 521. β -Sulphopropionic acid, 226. Sulphotoluide, decomposition of, 1031. Sulphotriphenylacetic acid, 352. Sulphur bromides, 978. cells, sensitiveness to light of, 2. - chlorides, 977. --- crystals in square tables, genesis 912.of, 16. dispersion equivalent of, 406. Sylvanite, 312. estimation of, in organic compounds, 918. in pyrites, 279, 280. Symphytum asperrimum as a fodder - expansion coefficient of, 408. plant, 646. - from the island of Saba, 430. Szaboite, 4a2.

Sulphur in iron, colorimetric estimation Klobukoff's method for the esti-- solubility of, in alcohol, 592. - sulphoxide, Trans., 583. - tetrachloride, compound of auric - volumetric estimation of, 918. Sulphuric acid as a manure, 954. - — chambers, action in, 400. ---- combined, volumetric estima-- electrolysis of aqueous, with reference to the forms of oxygen ob-- --- error in the nitrometric - - formation of, in the preparation of dithionic acid, 978. - ---- purification of, 302. ---- quantity of moisture remaining in gases after drying by, 278. - - and ethereal hydrogen sulphates in urine, estimation of, 739. - chlorhydiin, action of potassium nitrate on, TRANS., 225. - oxide, note on, TRANS., 584. Sulphurous acid, action of copper on, 423. action of, on selenious acid, - reduction of, by hydrogen volumetric estimation of, 918. - anhydride, dissociation of the --- carbonic anhydride, and carbon bisulphide, reactions with, 16. — estimation of, in beer, 102. - --- percentage of, in aqueous solutions of various specific gravities, and its determinations therein, - and iodic acids, rate of chemical change between, 658. Sulphuryl dichloride, action of potassium nitrate on, TRANS., 226. Superphosphate, alumina in, 288. - causes of discrepancy in analyses Superphosphates, influence of, on the production of sugar, 832. Supersaturation of salt solutions, 300. Sweet vernal grass, analyses of, 909-Symphoricarpus racemosa, the sugar of,

T.

Tall fescue grass, analyses of, 909-912. Tannin, estimation of, 285. - extracts of, investigation of, 1084. Tannins, dyes obtainable from, 403. investigations of, 496. Tartar, does every wine contain? 652. Tartar emetic, action of acids and bases on solutions of, 856. Tartaric acid, determination of, in wine lees and tartar, 1082. - - optical properties of, 1. mixtures of, with citric, acetic, and sulphuric acids, 13. Tartaric acid, specific rotation of aqueous solutions of, 12. Tartaryldibenzamic acid, 622. Tartramidobenzoic acids, 621. Tartranbenzamic acid, 622. Tartrandibenzamic acid, 622. Tartranilbenzamic acid, 622. Tartronamide, 48. Tartronic acid, 48. Tartrylbenzamic acid, 622. Tartryldibenzamamidic acid, 622. Taurine, derivatives of, TRANS., 486. Tellurium sulphoxide, TRANS., 583. Tellurous anhydride, dimorphism of, 767. Telluryl tartrates and citrates, 336. Temperature, influence of, on the heat of chemical combination, TRANS., 260. Terbia earths, spectrum of the, 293. equivalent of, 424, 507. Terebenthene, action of acetic acid on, 475.- action of picric acid on, 71. conversion of, into an inactive terpilene, 364. monohydric alcohols from, 475. Terebic acid, crystalline form of, 543. Terebilic acid, crystalline form of, 513. Terephthaldehyde, 461. action of animonia on, 547. - of potassium cyanide on, 876. — condensation of, with hydrocarbons, 946. - nitro-, action of potassium cyanide on, 701. Terephthalic acid, azo-, azoxy-, and hydrazo-, 702. - derivatives of, 801. Terephthalophenone, 349. - dioxime, 877. Terpene, constitution of, 336. Terpenes, 70. - refraction and dispersion equiva-

lents of, Trans., 612.

Terpineol, 71. Terpinol, non-existence of, 70. Terpinolene, 71. Tetrabenzylsilicon, crystalline form of, Tetrahedrite and zinc-blende, parallel growth of, 207. from the Alaska vein, Colorado, 21. Tetrahydrodimethylquinoline Tetrahydro-a-phenylquinoline and its nitroso-derivative, 722. Tetrahydroxybenzene, 1028. Tetrahydroxyterephthalic acid, 1028. Tetramethoxyindigodicarboxylic acid, Tetramethylammonium bromide, action of iodine monochloride on, Trans, — and chloride, action of bromine and chlorine on, TRANS., 852. - action of iodine on, TRANS., 847. — dibromide, Trans., 848. - action of ammonia on, Trans., 849. dichloriodide, Trans., 850. iodide, action of bromine on, TRANS., 848. - action of chlorine on, TRANS., 849. salts, action of halogens on, TRANS., 846. — sulphate, action of bromine and chlorine on, TRANS., 853. Tetramethylbenzene, 805. - consecutive, 694. Tetramethylenediamine and its derivatives, 528. Tetramethylenedicarboxylic acid, 934. - anhydride, 934. Tetramethylenetetracarboxylic acid, 934. Tetramethylmalonamide, 449. Tetramethylquinoline and its salts, 721. Tetraphenylsilicon, 618. - tetranitro-, 619. Tetra-m-tolylsilicon, 619. Tetra-p-tolylsilicon, 619. Tetrethylbenzenes, chlorinated, 343, 344. Tetrethyldiamidotriphenylmethane, *p*-nitro-, 553. Tetrethyl-p-leucaniline, 553. Tetrethylphosphonium iodide, action of bromine on, Trans, 854. salts, Proc., 164. Tetric acid, heat of solution and of neutralisation of, 8. Tetrodon, poison of the, 1049. Thalline and its derivatives, 80.

Terpilenol, synthesis of an inactive, 890.

Terpine hydrate, 70.

Thallium, detection of, in presence of lead, 490.

– in crude zinc, 851.

Thebaïne, 813.

– methiodide, 813.

Theory of solution, 300.

Thermal constants, law of, 408.

Thermochemical analysis of the reaction between alum and potassium hydroxide, 589.

Thermochemistry, application of, to geology, 35.

application of, to geology: zinc, 132.

- extension of the law of density numbers to a case in, 498.

new law in, 498.

Thermoelectric couples, influence of temperature on the electromotive force

piles, seat of the electromotive forces in, 751.

Thermometer, air- or hydrogen-, for low temperatures, 116.

- gas-, new form of, 116.

Thermopiles, new forms of, electromotive forces and resistances of, 3.

Thermo-regulator, 301.

Thiacetanilide, 700.

Thiacetic acid, compounds of aldehydes, ketones, and ketonic acids with, 937.

Thialdine thiocyanate, decompositionproducts of, 864.

a- and β-Thiënone and the a-hydrazide,

B-Thiënyl alcohol and chloride, 536. Thiënyl hexyl ketone acetoxime, 539.

- hydrosulphide, 788.

Thiënylacetic acid, amido-, 1014.

Thiënylacrylic acid, 871.

β-Thiënylglyoxylic acid and its derivatives, 1014.

Thinolite of Lake Labortan, crystallographic study of, 515.

Thioaldehyde, 864.

Thioammeline and its salts, 523.

- formula of, 217. a-Thiobutyric acid, 333.

Thiocarbamide, action of alcoholic potash on, 691.

action of ethyl acetoacetate on,

- action of mercury fulminate on,

— derivatives of, Trans., 190. - non-nitrifiability of, Trans., 639.

Thiocarbamides, desulphurisation of, by mercuric cvanide, 349.

Thiocarbanilide, melting point and crystalline form of, 876.

Thiocoumarin, 880.

Thiocroconic acid, 450.

Thiodiisobutyric acid, 333.

Thiodiisovaleric acid, 333.

Thio-\(\beta\)-dinaphthylamine, 1036.

Thiodiphenylamine, diamido-, 53.

Thioglycollic acid, compounds of aldehydes, ketones, and ketonic acid with,

Thiohydantoïn and its derivatives, 226.

Thionaphthen, 713.

Thionol, 55.

Thionoline, 56.

Thiophen, acetyl- and carboxyl-derivatives of, 538.

- action of acetic chloride on halogen-derivatives of, 537.

constitutional formula of, 227.

- formation of, 449.

– group, 534.

--- monobromo-, 227.

— nitrotrichloro-, 534.

— physical properties of, 613. tetrachloro-, tetrachloride, 339.

 trichloro-, and its derivatives, 534. Thiophens, brominated, derivatives of, 228,

Thiophenaldehyde, 870.

β-Thiophenaldehyde, 536. Thiophenaldoxime, 871.

Thiophendisulphonic acid and its derivatives, 339.

salts of, 613.

γ-Thiophenic acid and its salts, 229. Thiophenic acid, bromo- and iodo-,

537. - acids, lpha- and eta-, 534.

Thiophenol, 787.

Thiophensulphonic anhydride, chloro-, 534.

β-Thiophenylcrotonic acid, 879.

Thiophenylpropylene, 879.

Thiopten, 1032.

Thiopyruvacetic acid, 938.

Thiosulphates, detection of, in water,

- double, 17.

Thiosulphonates, ethereal, products of the hydrolysis of, 711.

Thiosulphuric acid, action of potassium permanganate on, 504.

Thiotenol and its acetyl-derivative, 536, 537.

Thiotolen (hydroxythiotolen), 537.

- γ-tribromo-, action of nitric acid on, 229.

 β -Thiotolenic acid, 539.

γ-Thiotolenic acid and its derivatives, 538, 540.

Thiotolenic acids, isomeric, 539.

Thio-xylene, a second, 871.

Thomas-slag, behaviour of, with water charged with carbonic anhydride, 663.

Thomas-slag, employment of, in agriculture, 277. Thorium, crystals of, 427. – potassium phosphate, 853. Thymol, azo- and diazo-compounds of, 545. - bromamido-, 1019. ---- bromonitro-, 1019. the propyl group in, 470. Thymolphosphonyl chlorides, 52. Thymolphosphoric acids, 52. Thymoquinol, bromo-, 1020. Thymoquinone, amido-, Trans., 725. — boiling point of, 239. - bromo-, 1020. Tiemannite, 314. Tiglic aldehyde $(a-\beta$ -dimethylacrolein), Tiglylic alcohol, 784. Timothy grass, analyses of, 909-912. Tin, action of, on the animal organism, and lead, specific heat of alloys of, 961.- antimony and arsenic, separation of, 1078. cells, electromotive force of, 752. crystallised, allotropic modifications of, 124. - estimation of, in hardhead, 180. - reaction of, with nitric and sulphuric acids, 599. - scrap, to work up, 109. - separation of, from antimony, 1077. — tetrethide, Proc., 166. See also stanno- and stannic. Tinstone from Bolivia, 514. Tinstones and tin-capels, Cornish, 988. Titanic acid as a mordant, 292. combination of phosphoric acid with, 670. - ---- new reaction of, 181. Titanium ammonium fluorides, 670. ——— minerals, distribution of, 126. - potassium fluoride, 670. - separation of, from aluminium and

Tobacco, effect of various manures on

o-Tolucarbostyril, dichloro-, 160.

- m-bromo-, oxidation of, 788.

- m-nitro-, oxidation of, 143.

β·γ-dichlorodinitro-, 160. Toluene, acetazimido-, 874.

tassium ferricyanide, 142.

leaves and stems, analysis of, 177.

- o-bromo-, oxidation of, with po-

- p-chloro-m-nitro-, and its reduc-

- ratio of starch to sugar in,

 β - γ -dichloro-, and

chloride on, 694. - nitrochloro-, 1022. Toluenedisulphonates, p-bromo-, 152. Toluenedisulphonic acid, and the amido-, and bromo-acids, and their salts, 150, 151, 152. - p-iodo-, 152. Toluenes, dichloro-, 452. m-Toluenesulphonamide, 788. p-Toluenesulphonamide, oxidation of, with potassium ferricyanide, 142. Toluenesulphonic acid, nitro-, and its salts [1:2:5], 153. Toluene-p-sulphonic acid, bromine on, Proc., 235. Toluic acid, amido-, phosphate 242.Toluidine, m-bromo-m-nitro-, 1018. - p-chloro-m-nitro-, 49. —— hydrogen sulphate, 347. $p ext{-} ext{Toluidine}$ picrate, 454. - two disulphonic acids of, 151. Toluidines, 872. -- chloro-, 1022. separation of, 1021. Toluidinesulphonic acid, and ioco., 153. - --- nitro- [1:2:4:5], and its derivatives, 152. Toluidylmelamine, TRANS., 742. Toluidoacetic acid, nitro-, 351. Toluisatin and its derivatives, 154. p-Tolunitrile, m-nitro-, 351. Toluquinone, chloro-, 614. o-Toluquinoline, trichloro-, 160. p-Toluquinoline, α-β-y-trichloro-, preparation and derivatives of, 159. Toluquinolines substituted in the pyridine-ring, 159. Toluylene isothiocyanate, 234. Toluylenediamidocyanuric chloride. TRANS., 741. o-Toluylenediamine, Trans., 259. action of ethyl chloracetate on, 83. Toluylenediaminesulphonic [1:2:4:5], 153.m-Toluylenediphenylthiocarbamide, 234. m-Toluylenedithiocarbamide, 234. Toluylenedithiocarbimide, and its preparation, 234. Toluylenethiocarbimide, 234. p-Tolyl methyl ketone, 462. p-Tolylbenzoïn, 888. p-Tolyldiphenylmethanecarboxylic acid, m-Tolylene diisocyanate, Trans., 257. Tolylglycin, o-nitro-, 351. p-Tolylhydrazine, sulphonation of, 237. Tolylhydrazinesulphonic acid, nitro-[1:2:4:5], 153.Tolylmethoxyquinizine, 1046.

Toluene, nitro-, action of chromyl

Tolylparazobenzoylacetic acid, the cor-

iron, 492.

904.

the ash of, 177.

p-Tolucarbostyril,

tion products, 49.

responding acetophenone, and ketoxime, 62. p-Tolylphthalide, 1028. Topaz, Brazilian, liquid inclusions in, 674.- from Stoneham, Maine, 213. — from Tasmania, 603. ---- in rhyolite, 991. Tourmaline, blue, from Chapey, 214. - from New South Wales, 774. - from Tasmania, 603. Toxic action of alkaline salts, 385. Trachytes of the Eperies-Tokay mountains, 131. Tremolite, chemical composition of, 28. Triacetyl cyanurate, 217. Triazobenzene, 459. Triazobenzoic acid, 459. Tribenzoyl-β-hydrojuglone, 69. Tribenzylamine, action of sodium on,616. derivatives, 615. Tribenzylbenzoxyammonium iodide, Tribenzylethylammonium iodide, 615. Tribenzylhydroxylamine, 796. Tribenzylisopropylammonium iodide. 615.Tribenzylmethylammonium iodide and hydroxide, 615. Trichloracetic acid, decomposition of, by water, 332. Tridecovlduodecylcarbamide, 685. Tridecylamide, 685. Tridecylamine and its salts, 685. Tridecylnitrile, 685. Triethoxybenzoic acid, 558. Triethoxyphenylpropionic acid, 558. Triethyl cyanurate, normal, 930. · isocyanurate, 931. Triethylbenzenes, chlorinated, 231, 343, Triethyldaphnetic acid, α - and β -, 558. Triethylisomelamine, 42. Triethylmelamine, normal, 522. Triethylsulphine bromide, formation of, 861. Trigonella fænum græcum, alkaloïds of the seeds of, 85. Trigonelline and its salts, 85. Trihydroxybutyric acid, normal, 328. Trimellitic acid, TRANS., 531. Trimethyl cyanurate, 929. – isocvanurate, 929. Trimethylamine chlororhodate, 311. Trimethylanthraquinone, 1029. Trimethyl-o-benzylbenzcic acids, 1029. Trimethylbutyllactic acid and anhydride, amido-, 528, 529. - amido-, 1009.

Trimethyldiamidobenzophenone, 362.

813.

Trimethyldiethylamidobenzene, TRANS.,

ethyl sodacetoacetate, 689. Trimethylenediamine and its derivatives, 527.Trimethylenedicarbamide, 528. Trimethylenedicarboxylic acid (1:1), Trimethylenediurethane, 527. Trimethylenecarbamide, 527. Trimethylethylene, action of chlorine or**,** 136. Trimethylindole, 806. Trimethylisomelamine, 42. Trimethylmelamine, normal, 522. Trimethyl-m-nitrophenylammonium hydroxide and bromide, 941. Trimethyl-m-nitrophenyl-m-nitrophenoxide, 941. Trimethylpyrrolidine, 529. Trimethylquinolinealdehyde, 264. Trimethyltaurine, decomposition alkali, TRANS., 486. Trimethyluracil, 339. Tri-α-naphthylmelamine, Trans., 315. Triphenol-aluminium chloride, 143. Triphenyl isocyanurate, 233. Triphenylacetic acid, 352. Triphenylamine-derivatives, 553. Triphenylarsine hydroxynitrate, 618. oxide, 618. triamido-, 618. Triphenylisomelamine and its derivatives, 233. Triphenylmelamine, 41, 233. asymmetrical, and its derivatives, 233. - normal, 522. Triphenylmethane, new synthesis of, Triphenylmethanecarboxylic acid, 1035. Triphenylmethyl bromide, its action on ethyl sodiomalonate, Proc., 251. Triphenylphloroglucinol, Proc , 189. Triphenylpropane, symmetrical, 143. Triphenylrosanilines, trichloro-, 943. Triphenylsilicol, 619. Triphenylsilicon chloride, 619. Triphenylstibine and its derivatives, 885.Triphenyltrisodiophloroglucinol, Proc., Tripiperidylmelamine, 41. Tripropylamine, 1005. Trisilicobenzoylsilicic acid, 618. γ-Trithioaldehyde, 865. ${
m Tri}$ -p-tolylmelamine, normal, 523. Trypsin, fate of, 381. formation of, 381. Tumbeki, analyses of, 644. Tungstates, acid, titration of, 597. para-, 597. Tungsten, sulphur compounds of, 510.

Trimethylene bromide, action of, on

Turnips grown with different manures, comparative yield of, 913.

- manuring of, 1068.

Turquoise (calaite), discovery of, in Russia, 516. - from Nischapur in Persia, 25.

Tyrotoxicon, 373.

U.

Uigite from Skye, 130.

Ulexine, 1048.

Ultramarine, formation of, in the wet way, 306.

Umbelliferone, ethyl ether, and bromo-, 881, 882.

- methyl ether, bromo- and dibromo-, 881, 882.

Undecylenic acid, bromo- and iodo-, 1011.

constitution of, TRANS., 205. - magnetic rotation of, Trans.,

Union, interchangeable, hypothesis of,

Unsaturated compounds, action of nitrous and hyponitric acids on, 620.

Uranium, atomic weight of, 598.

- compounds, relation between the absorption and the phosphorescence of, 189.

— oxides, 598.

- separation of, from the alkalis, &c., 922.

--- sesquisulphide, 855.

– tribromide, 855.

Uranothallite, from Joachimsthal, 24.

Uranyl sulphates, basic, 982. Urea, action of hexabromacetone on, Trans., 693, 743.

action of nitrous acid on, 747.

- critical and experimental study of the Knop-Hüfner method of determining, 104.

- error in the estimation of, by the hypobromite method, 747.

- ferment, soluble, from the Torula ureæ, 641.

- in urine, effect of allantoin on the estimation of, 583.

— in urine, estimation of, 279.

- nitrification of, TRANS., 639.

picrate, 453.

titration of, 396.

Ureometer, 396.

Uric acid, action of nitrous acid on, 747.

— estimation of, 102.

- - in insects and molluses, 1056. - - in man, influence of glycerol, sugar, and fat on the secretion of, 82Ž.

Uric acid, new method for the determination of, 748.

Urinary fermentation, 276.

Urine, albuminoïd substance in, 87.

- aromatic compounds in, 384.

- clinical examination of, by means of Fehling's solution, 744.

detection of alkaloids in, by means of iodine solution, 748.

- of hæmoglobin in, 956.

of oxalic acid in, 395.

- effect of allantoïn on the estimation of urea in, 583.

 estimation of creatinine in, 397. - - of sulphuric acid and ethereal

hydrogen sulphates in, 739. ethereal hydrogen sulphates in,

729.

- nitrification of, Trans., 642. - normal, precipitate produced by pieric acid in, 1056.

- pathological, alkaloïds in, 88.

phenylhydrazine as a test for sugar

presence of diastatic and other

ferments in, 902. relations of the phosphates in,

sugar in, on a diet of cane-sugar,

- value of Brücke's method for the removal of interfering substances from, in testing for glucose, 745.

 volatile fatty acids in, 384. Urines, phosphatic, supposed to be

albuminous, 384.

Urethane, 1085. therapeutic action of, 640.

Urethanes of the paraffin series, 692. Urvölgite from Sandberg, Hungary, 517.

Uterus, occurrence of peptones in fibromata of, 167.

V.

Valency, change of, 661. Valeraldehyde, dibromo-, 783.

Valerian, camphol from, 1040. Valeric acid, y-amido-, 1008.

- --- γ-cyano-, 880.

Vanadates from New Mexico, 26. Vanadic acid, action of hydracids on,

- action of, on ammonium salts,

— anhydride, 18.

- action of, on haloid salts of the alkalis, 855.

Vanadic acid, action of reducing agents combinations of, with oxyacids, 599. Vanadicovanadates, 205. Vanadinite, from New Mexico, 26. Vanadious sulphate, electrolytic preparation of, Trans., 822. Vanadium compounds, 428. - some new, Trans., 30.
defection and estimation of, by means of oxycellulose, 923. extraction of, 428. Vanadyl chloride, preparation of, 204. Vanillin in asparagus, 387. --- new synthesis of, 60. --- occurrence of, in assafætida, 906. preparation of, from the gum of the olive tree, 238. Vapour-density determinations, 842. --- source of error in, 116. - densities, determination of, 298. - - dissociation in the determination of, 9. -- of chloral ethyl-alcoholate, TRANS., 685. - pressures of alcohols and organic acids, and the relations between them, TRANS., 761. of bromine and iodine, TRANS., 453. — - of mercury, TRANS., 37. - - the statical and dynamical methods of estimating, 410, 965. - tension of mercury at ordinary temperatures, 963. - tensions, do the static and the dynamic methods of measuring give different results? 193. Vapours, critical temperatures and pressures of, 963. saturated, relations of pressure, temperature, and volume in, 764. - --- tension of, over liquid and solid substances, 846. Vateria indica, fat of the fruit of, 223. Vegetable albinism, studies in, Trans., 839.— fibres, bleaching, 187. - substances, bleaching, with chloride of lime, 188. Vegetation, action of ferrous oxide on, 486. formation of oxalic acid in, 734. — physiological function of soluble starch in, 903. Venous, hæmoglobin crystals, 374. Vernine, preparation of, 157. Vicia villosa, composition of, 645. Vinaconic acid, action of bromine on,

Vinegar plant, nature of, Trans., 433.

Vines, composition of, 1062. - treated with copper sulphate and lime, copper in, 738.

Vinyl ethyl ether, mono-, di-, and trichloro-, 606, 607.

Vinylethylene, its preparation and oxidation, Trans., 81.

Viper, Indian, venom of, 1058.

Virus, certain, zymotic properties of, 170.

Visual purple, 375.

Volatile liquids, method of determining the purity of, 322.

Volcanic rocks of Assab, 993.

Voltaic cell, seat of the electromotive forces in, 750, 751.

Volumes, specific, at the boiling point, &c., 759.

Volumetric system, new arrangement of, 96.

W.

Walnut oil, 644.

Water analysis, permanganate test in,

detection of thiosulphates in, 99.
estimation of dissolved oxygen in,

--- of free oxygen in, Trans., 751. - from Uriage (Isère), composition of, 37.

 natural, presence of a reducing agent in, Proc., 225.

- of crystallisation, 972; TRANS., 280, 411, 690.

- -- estimation of, in organic compounds, 96.

 observations on, Trans., 788.

— oxidation of ammonia in, 917.

— polluted, self-purification of, 399. - potable, at Royat (Puy de Dôme),

micro-organisms in, 286.

859.

— purification by irrigation, 287.

---- rain, nitrogen compounds in, 737.

- removal of micro-organisms from, 573.

— sea, chemistry of, 322, 679.

—— sewage, purification of, 286.

- variation of temperature of maximum density of, with pressure, 9.

- waste, from starch factories, 1066. Waters at Bagnères de Luchon, Haute-Garonne, 997.

– mineral, of St. Nectaire (Puy de Dôme), 858.

 of Warmbrunn, Silesia, 997. - of the Firth of Forth, salinity of, 322.

Waters, river and well, destruction and formation of nitrates in, Trans., 632,

-thermo-mineral, of Hammam-el-Lif, Tunis, 322.

Well waters, destruction and formation of nitrates in, Trans., 632, 658, 664. Wheat flour, proteids of, 1065.

 germ, composition of and presence of a new sugar and allantoïn in, 734. growth of, after sugar-beet and after potatoes, 906.

Wherlite, 312.

Willemite from Greenland, 519.

Wine, detection of coal-tar colours in, 397.

 of colouring matters in, 183. of salicylic acid in, 924.

- determination of nitrogen in, 652. --- does every, contain tartar? 652.

—— estimation of glycerol in, 1080. - method of distinguishing natural colours, from added coal-tar colours,

Wine-lees, examination of, 182.

Wines, sparkling, inversion of canesugar in, 608.

- sulpho-conjugate colouring matter in, 105.

Wolframite from Felsöbánya, 312.

Wood, decaying, blue colouring matter of, 810.

— gum, 955.

- meadow grass, analyses of, 909,

— naphtha, 289.

- papers, different, percentage of water in, 112.

Wool, bleaching, with hydrogen peroxide, 292.

keratin, formula of, Proc., 142, 147.

Wrightine (conessine), 370.

X.

X of Soret, 667.

Xanthoarsenite, a new mineral from Oerebo, 25.

Xanthocreatinine, 634.

Xanthophyllidrin, 1041.

Xanthopurpurin, synthesis of, 475. Xanthostrychnol, 268, 814.

Xenotime, from Minas Geraes, Brazil,

o-Xylene, mononitrodibromo-, and dinitrodibromo-, 57.

p-Xylene, nitro-derivatives of, 344.

Xylenediamine, 58.

m-Xyleneorthodiamine, 58.

m-Xylenephthalide, 1029.

Xylenes, chloro-, 613.

Xylenesulphonic acid, derivatives of, 154.

m-Xylenesulphonic acid, o-amido- and its salts, 153.

nitration products of, 708.

Xylenesulphonic acids, action of bromine on aqueous solutions of, 1032.

-- bromo-, 356.

— mono- and dinitro-, 708, 709.

m·Xylenol, Trans., 23.

-- [1 : 3 : 4], 345. o-Xylenol, 58.

- consecutive, and its tribromo-derivative, 57.

p-Xylenol, nitro-, ethyl salt of, 58.

Xylenolsulphonic acid and its salts,

– nitro-, 154.

o-Xylenyl chloride, 143.

Xylide, nitraceto-, 58. Xylidine, commercial, 145.

– dibromo-, 356.

- hydrochlorides, action of methyl alcohol on, 58.

- nitro-, 58. o-Xylidine, consecutive, and its salts, 57, 145.

· dibromo-, 57.

p-Xylidine, 57. Xylidinediamine, 547.

Xylidines, consecutive, 145. - separation of, 699.

six isomeric, and some of their derivatives, 58.

o-Xylidines, 235.

Xylidinesulphonic acids, 355.

m-Xyloquinol, 58.

o-Xyloquinol, 58.

m-Xyloquinone, 58. o-Xyloquinone, 58.

m-Xylyl methyl ketone, 463.

Y.

Ya of Marignac, 667.

--- the earth, 506.

Yarrow grass, analyses of, 911, 912.

Yeast, influence of light on the growth of,

Yeasts, abnormal, secretion of nitrogenous substances by, 733.

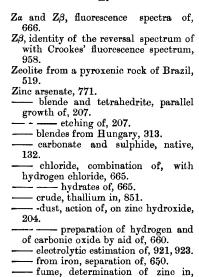
Yellow, Martius, toxic effect of, 273.

Yellows, coal-tar, toxic effect of, 273. Yttria, 853.

Yttrium, fluorescence spectrum of, 838.

490.

Z.



Zinc hydroxide, action of zinc-dust on, 204. methylethylacetate, 867. - new method for estimating, 836. - nickel, copper, cadmium, &c., separution and estimation of, 580, 650. - peroxide, 305. plumbiferous, behaviour of, on remelting, 594. - pure, preparation of, 204. - separation of, from cadmium by electrolysis, 281. - some properties of, 204. - sulphate, physiological action of, 641. - sulphates, basic, 981. Zircon in stratified rocks, 24. - minerals, distribution of, 126. Zirconia, light, 417. Zirconic acid, combination of phosphoric acid with, 670. Zirconium, method of separation and estimation of, TRANS., 149, 481. - pentoxide of, TRANS., 149, 483. — potassium phosphate, 853.

Zoisite, 319.

Zygadite, 518.

Zorgite, analysis of, 22.